# SpoolMail

Programmer's Guide and Reference
Licensed Program 2A55SM1 V2R9M0
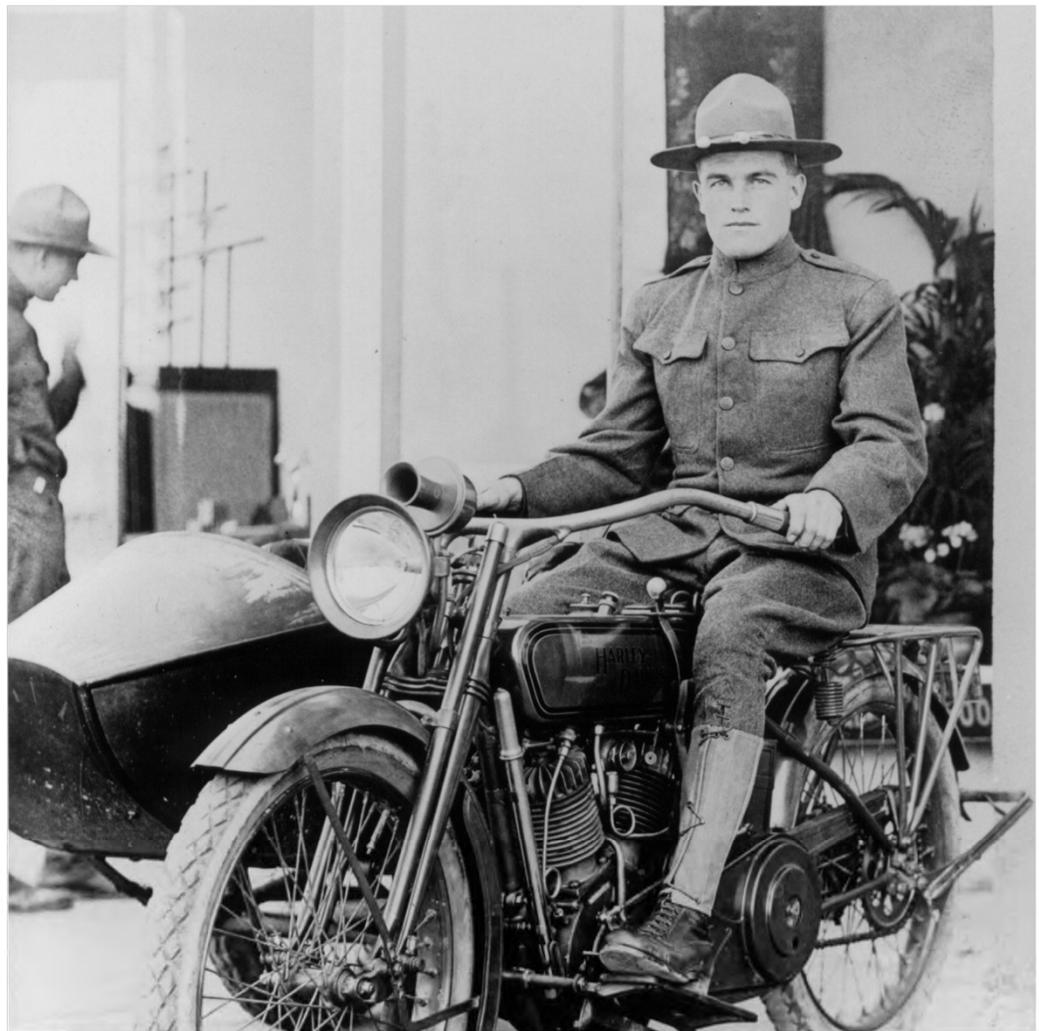
Spooled File Conversion

Edition

Nineteenth Edition (January 2015)

This edition applies to the licensed program SpoolMail (Program 2A55SM1), Version 2 Release 9 Modification 0, 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.

This manual is available as option 1 from the SPOOLMAIL menu, in PDF format in directory /Gumbo/Proddata/2A55SM1/doc on your system, and on the web at www.gumbo.com

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Chapter 1 Introduction

What's In This Chapter

This chapter introduces you to SpoolMail. The chapter:

- Gives an overview of SpoolMail.
- Describes the features of SpoolMail.
- Describes the conversions of SpoolMail.
- Describes SpoolMail's spooled file splitting.
- Describes SpoolMail's logical printer support.
- Describes SpoolMail's relationship to other products.
- Outlines future directions for the product.
- Describes conventions used in this manual.

SpoolMail Overview

SpoolMail is an IBM i based software utility that delivers System i spooled output as email. SpoolMail integrates with IBM i's built-in mail support to provide email delivery of printed reports to any email recipient.

SpoolMail allows your users to receive printed reports in a timely, convenient and inexpensive email form. Spooled output from IBM i applications is delivered with a user's regular email ready for on-line viewing and local printing. You reduce costs by avoiding the expense of printing, manual handling and postage associated with printed output. You also avoid the expense of changing your existing IBM i applications to deliver information as email. All processing is performed on the System i, providing a stable platform for generating email.

When sending the email, you have a wide variety of options to tailor the delivered message to your specific needs. Addressing includes multiple recipients, copy recipients and blind copy recipients. Additionally, you can include multiple Reply-to: addresses as well as specify the email address the message appears to come from. Delivery confirmation by read receipt can also be specified. Optionally, a digitally signature can be included with the email.

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 IBM i 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), optionally ISO 19005-1:2005 PDF/A compliant 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 stream 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.

SpoolMail Features

The main function of SpoolMail is accessed by running the Send Spool Mail (SNDSPLMAIL) command. The command takes a spooled file and an email address as input. The spooled file is retrieved from IBM i's spool store and converted to the requested format. The converted spooled file is then sent to the email address entered using IBM i's built-in mail support. IBM i processes the email and either delivers it directly to the recipient(s) or forwards it to a mail router for delivery.

Some additional mail features of SpoolMail are:

- Extensive ability to convert spooled files to PC files including the ability to split a spooled file into multiple emails based on data on the page.
- Additional documents can be included with the generated email.
- User exit available for supplying the recipient's email address from data, such as customer number, on the page.
- Support for distribution lists via the IBM i system distribution directory.
- Support for direct delivery to SMTP clients without IBM i system distribution directory entry.

Commands to help you trouble shoot and, optionally, automatically configure IBM i to send mail are also included with SpoolMail.

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.

Our Retrieve Page Data (RTVPAGDTA) command is included in the product. The command allows you to retrieve data from a specific position spooled file. The requested data is returned in a Control Language (CL) program variable.

For example, by retrieving the page position of the customer number in a spooled file containing an invoice, you can determine the customer number for which the invoice was generated from within a CL program.

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

SpoolMail includes a command and associated print driver programs that allow you to create logical printer devices. Logical printers perform SpoolMail's spooled file processing automatically for all spooled files placed on their output queue.

SpoolMail Conversions

SpoolMail supports all of the IBM i spooled file print data streams:

- *SCS (SNA Character String)
- *IPDS (Intelligent Printer Data Stream)

- *AFPDS (Advanced Function Presentation Data Stream)
- *USERASCII (ASCII data stream)
- *LINE (1403 line data)
- *AFPDSLINE (Mixed *AFPDS and *LINE data)

SpoolMail can produce stream files in a wide variety of industry standard formats:

- Adobe's Portable Document Format (PDF)
- ASCII text (TXT)
- Microsoft's Rich Text Format word processor file (RTF)
- The world wide web's Hyper Text Markup Language (HTML)
- Printer specific print data streams produced by IBM i's Host Print Transform (HPT)
- An unaltered copy of the original print data stream (NONE)
- Adobe's PostScript (PS)
- IBM's AFP Print File (AFP)
- IBM's Final Form Text (FFT)
- 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:

Figure: Print Data Stream/Conversion Matrix

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
*AFPDSLINE	note	note			note	YES	note		note

```
Notes:  o Print Data Stream is found on WRKSPLFA's "Printer device
          type" parameter. Use option 8 from WRKOUTQ or WRKSPLF.
        o PDF is double byte enabled for Chinese/Japanese/Korean.
        o TXT is double byte enabled for *SCS.
        o Convert *LINE and *AFPDSLINE to *AFPDS using OVRPRTF
          CVTLINDTA(*YES) or respool using CRTAFPDTA/PRTAFPDTA.
```

The conversion process is described in detail in the Conversions chapter.

SpoolMail's Spooled File Splitting

SpoolMail has the ability to split spooled files into multiple emails based on data found on each page. A request to split the spooled file is indicated by specifying the *PAGDTA special value as the recipient on the Send Spool Mail (SNDSPLMAIL) command. 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 stream file and emailed. If the page data is not an email address but other identifying information, the Address mapping program (ADDMAPPGM) parameter specifies a customer supplied program to calculate an email address based on the data on the page.

Figure: 3 Page Spooled File

```
INV320    Inventory Transaction Report     Page:  3

Branch name: Seattle


    INV320    Inventory Transaction Report     Page:  2

    Branch name: Redmond


        INV320    Inventory Transaction Report     Page:  1

        Branch name: Seattle


          ..........  ...  ....................  ........
          ..........  ...  ....................  ........
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          ..........  ...  ....................  ........
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          ..........  ...  ....................  ........
```

For example, consider a 3 page spooled file with a 10 character branch name printed at line 3, position 15 of each page. Also consider an address mapping program that retrieves the email address of a branch manager based on the name of the branch. If pages 1, and 3 contain "Seattle" and pages 2 contains "Redmond" then the following command generates two emails:

```
SNDSPLMAIL  TOSMTPNAME(*PAGDTA) PAGDTA(3 15 10)
            ADDMAPPGM(QGPL/BRCH2MGR) ...
```

The first, sent to the manager of the "Seattle" branch, contains page 1, and 3 while the second, sent to the "Redmond" branch manager, contains pages 2.

The *PAGDTA special value is enabled for APF FFT HTM PDF RTF TIF and TXT conversions. For additional information see the Send Spool Mail (SNDSPLMAIL) command's help text. A skeleton address mapping program written in CL is included in the file SMSOURCE, member SKLADDMAP.

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 IBM i's writer commands (WRKWTR, STRPRTWTR, ENDWTR, HLDWTR, etc.) and IBM i'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 emailing from any PC application for any PC on your network. Combine this with SpoolMail's PDF support and you can email PDF files without Acrobat.

Product Support Features

GUMBO products include a range of standard features that make them easy to use, easy to manage, and easy to live with:

- Extensive manual, both online as menu option 1 and in PDF
- Context sensitive help for every command and parameter.
- Menu that provides organized access to the product's features.
- Products are packaged as licensed programs and participates in the full range of support provided by IBM i Licensed program installation, PTF management, etc. are handled with the same commands used to manage IBM® software.
- Unlike IBM® Licensed Programs, our products are packaged to allow multiple releases to be installed at the same time, which facilitates new release testing.
- Product PTFs are available on the web at www.gumbo.com or can be retrieved and installed in a single step using our Retrieve Gumbo PTF (RTVGSIPTF) command.
- Our products include a hot site friendly automatic authorization function that allows you to immediately move operations to any back up or fail over machine without contacting us for a license key or authorization code.
- We include a Check SpoolMail Authorization (CHKSM1AUT) command that allows you to exercise the product's authorization algorithm and insure there are no authorization "surprises".
- An installation verification option is available on the menu. You can easily verify that the product is correctly installed.
- All (applicable) objects in our products are digitally signed allowing you to verify their integrity. Modifications that could jeopardize the security of your system are easily detected with IBM i's Check Object Integrity (CHKOBJITG) command.
- Our products are upward compatible with future releases of IBM i. You can install a new releases of IBM i without installing a new release from us.
- Our products are compatible with all IBM i security levels. We use only published interfaces.

Product Positioning

Gumbo Software, Inc. has several IBM i based products:

Number	Licensed Program
2A55SAM	Spool-a-Matic - Convert IBM i spooled files to PDF, RTF, HTML, etc. in the Integrated File System
2A55SM1	SpoolMail - Email IBM i spooled files as PDF, RTF, HTML, etc.
2A55XL1	Excel-erator - Convert IBM i database files into spreadsheets in the Integrated File System or as email
2A55SM2	Gumbo Mail - Send email from your applications
2A55DCR	Dicer - Merge/sort/split/duplicate spooled files
2A55RDA	Report Designer - Edit DDS, RPG and ILE/RPG print specifications

2A55RM1   Report Manager - Automate report distribution, bursting and spooled file management

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

```
                                          +----------------------------------+
                                          | Product                          |
          +-------------------------------+----+---+---+---+---+---+---+      |
          | Function                      | SAM|SM1|XL1|SM2|DCR|RDA|RM1|      |
          +-------------------------------+----+---+---+---+---+---+---+      |
          | Primary input to product      | SPL|SPL|DBF|IFS|SPL|SRC|SPL|      |
          | Primary output from product   | IFS|EML|I/E|EML|SPL|SRC|SPL|      |
          +-------------------------------+----+---+---+---+---+---+---+      |
          | Monitor output queues for work| YES|YES| - | - | - | - |YES|      |
          | Spooled file distribution     |  - | - | - | - | - | - |YES|      |
          | Burst (split) spooled files   | YES|YES| - | - |YES| - |YES|      |
          | Merge/sort/duplicate spooled files|- | - | - | - |YES| - |YES|    |
          | Convert spool to TXT stream file| YES|YES| - | - | - | - |YES|    |
          | Convert spool to PDF/RTF/etc stream file|YES|YES|-|-|-|-| - |    |
          | Convert DB file to spreadsheet|  - | - |YES| - | - | - | - |      |
          | Email stream file as attachment| - |YES|YES|YES| - | - |YES|     |
          | Write stream to Integrated File System|YES|-|YES|-|-|-|YES|       |
          | Set up IBM i SMTP and mailhub |  - |YES|YES|YES| - | - |YES|      |
          | Edit DDS, RPG, ILE/RPG source code| -| - | - | - | - |YES| - |    |
          +-------------------------------+----+---+---+---+---+---+---+------+
          | Where: DBF = Database file                                        |
          |        EML = Email                                                |
          |        IFS = Stream file in the Integrated File System            |
          |        I/E = Both IFS and EML                                     |
          |        SPL = Spooled file                                         |
          |        SRC = Source code                                          |
          +------------------------------------------------------------------+
```

Future Directions

Future releases of SpoolMail will include enhanced functionality based on customer feedback. Additionally, enhancements may be added to an existing release by Program Temporary Fix (PTF).

Contact *GUMBO* to suggest additional enhancements.

Manual Conventions

A note on conventions used in this manual. In several places, instructions for entering commands are given. When the command is intended to be run from a PC command prompt, it is flagged by [PC]. When the command is intended to be run from an IBM i command line, it is flagged by [i], or is not flagged at all. [Enter] denotes the enter key.

Chapter 2 Installation

What's In This Chapter

This chapter describes:

- How to install SpoolMail.
- How to verify that SpoolMail is installed correctly.
- API authority granted during installation
- How to include the SPOOLMAIL library in a job's library list.
- How to determine release dependencies.
- How to test a new release while leaving the old in production.
- How to remove SpoolMail from the system.
- How to find additional installation information.
- How to contact technical support.
- How to integrate Report Manager and SpoolMail.
- Hot site installation.
- Permanent Authorization Codes.

Installing SpoolMail

Follow these instructions to install SpoolMail V2R9M0 on IBM i using physical media or a virtual image:

Prepare

If you are upgrading a previous release (if SpoolMail is currently installed), perform these steps before installing the software:

1. Read the Enhancement Summary to determine if any changes affect your installation.
2. Insure that the product is not in use, as the installation process must clear the product's library. This will fail if objects such as menus are in use. If the installation fails, the previous release will be restored.

Install

Note: If you are installing from a save file downloaded as a self extracting zip (.exe), use the save file specific "readme.htm" instructions included in the download.

1. Sign on to the system as the security officer (QSECOFR).
2. Verify that your machine is at IBM i V7R1M0 or later by running:

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

   Note: If you are running a version of IBM i earlier than V7R1M0 you cannot install SpoolMail V2R9M0 on your machine. You must install an earlier version of SpoolMail or upgrade the operating system.

3. Verify that user domain objects are allowed in the libraries SPOOLMAIL 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 SPOOLMAIL 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. Insure that IBM i will be able to verify the signatures that we apply to our product's objects by installing our Signing Certificate and Root CA Certificate using Digital Certificate Manager. Alternately, insure that signature verification will not prevent the restore operation by running:

```
WRKSYSVAL SYSVAL(QVFYOBJRST)
```

Take option 5 to display the value. If the value is 3 or higher, use option 2 to temporarily change the value to 1.

5. Mount the physical media or virtual image on the appropriate device.
6. Submit the Restore Licensed Program (RSTLICPGM) command to batch:

```
RSTLICPGM  LICPGM(2A55SM1) DEV(device-name) LNG(2924)
```

Note: Where "device-name" is the device where the media or image was mounted and is usually OPT01.

Note: During the restore operation, the system operator message queue may receive inquiry message CPA3DE4 "Directory not registered. (C G)". Unless you are using a directory naming convention similar to ours (that is the directory specified in the CPA3DE4's second level text is unrelated to our software), you can safely respond with a "G" to reestablish the relationship between the directory and the product. Typically the message will occur three or four times.

Finish

When the RSTLICPGM command completes, library SPOOLMAIL and directory '/Gumbo/ProdData/2A55SM1' contain the new software. To complete the installation:

1. If you have an Authorization or Instructions letter with your permanent authorization code, enter the code now.

    Note: SpoolMail automatically grants 30 days usage for new installs or 90 days usage for release upgrades.

2. Retrieve the current cumulative SpoolMail PTF package by running the following command:

```
SPOOLMAIL/RTVGSIPTF
```

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

3. Visit our PTF page at www.gumbo.com and check the **Additional IBM i PTF Information** section for IBM PTFs you may need to install.
4. You can access the SpoolMail menu by running the following command:

```
GO  MENU(SPOOLMAIL/SPOOLMAIL)
```

Verifying SpoolMail Installation

You can verify that SpoolMail has been correctly installed by running the Check Product Option (CHKPRDOPT) command:

```
CHKPRDOPT PRDID(2A55SM1) RLS(V2R9M0) CHKSIG(*NONE)
```

Note: If you have installed our digital certificates, specify CHKSIG(*ALL) instead of CHKSIG(*NONE) and digital signatures will be checked.

If the message 'No errors detected by CHKPRDOPT.' is displayed on the bottom of your display when the command finishes, SpoolMail is installed correctly.

If the message is not displayed, check your job log messages or see the Recovery Procedures in the *Software Installation Problems* section of the *Trouble-Shooting* chapter of this manual.

API Authority Granted During Installation

The first time SpoolMail is installed on a system, public authority *USE is granted to 3 of the IBM i supplied spooling APIs. These are QSPOPNSP, QSPGETSP, and QSPCLOSP. The APIs are used by SpoolMail to open, read and close spooled files. This is required to perform the product's functions.

Security restrictions and authority requirements pertaining to spooled files and output queues remain in effect and are enforced by IBM i 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 SpoolMail exists on the system. This prevents new releases from altering changes made after the initial installation.

Library List Considerations

Library SPOOLMAIL must be in the library list of jobs using SpoolMail commands, or the commands must be qualified with library SPOOLMAIL. Depending on your installation and intended use, you can choose to:

- Add library SPOOLMAIL 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.
- Add library SPOOLMAIL to the initial library list parameter of job descriptions controlling jobs that will use SpoolMail commands. (recommended)
- Run an ADDLIBLE SPOOLMAIL command in individual threads requiring SpoolMail commands.
- Qualify the command names on each use:

  ```
  SPOOLMAIL/CHGSM1DFT
  ```

  Library SPOOLMAIL will be temporarily added to the product portion of the current thread's library list.

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

Release Considerations

SpoolMail operates under IBM i V7R1M0 or higher. Releases occur on a different schedule than IBM releases. Once SpoolMail is installed, the following considerations apply:

- A new release of IBM i may be installed without installing a new release of SpoolMail.

  SpoolMail uses only published or IBM sanctioned interfaces and is upward compatible with all releases of IBM i. The SpoolMail authorization code does not change.

- A new release of SpoolMail may be installed without installing a new release of IBM i.

  Any change in the requirements for operating system release level will be noted in the documentation accompanying the SpoolMail release. The new authorization code must be entered.

- A new release of SpoolMail may be installed over any prior release of SpoolMail.

  You can skip "missed" releases.

- More than one release of SpoolMail may be installed on a system at one time.

  By restoring SpoolMail to a library other than SPOOLMAIL, a new release can be installed for testing while the old 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.

- When a new release of SpoolMail is installed in the same library as an old release the following processing is performed in order to preserve data and SpoolMail authorization information:
    1. The SpoolMail library is saved to QGPL/SM1VxRyMz. Where VxRyMz is the old release.
    2. Product objects that contain default settings and operational information are copied to library QTEMP.
    3. The SpoolMail library is cleared.
    4. SpoolMail is restored.
    5. Default settings and operational information are copied back to the product objects.
    6. All objects duplicated to QTEMP are deleted.
    7. Save file QGPL/SM1VxRyMz is deleted.

Note: *GUMBO* recommends making a backup of the old release before installing a new release of SpoolMail.

New Release Testing

Unlike IBM licensed programs, *GUMBO* licensed programs are packaged in a way that allows multiple release to be installed at the same time. This feature allows you to test a new release while the old release remains in production.

The key to new release testing are the LIB() and CODHOMEDIR() parameters of IBM i's Restore License Program (RSTLICPGM) command which allow you to restore the product to a library name and directory different from those used during packaging.

To test a new release, follow this procedure:

1. Review the Enhancement Summary for any release-to-release considerations that could affect your installation.
2. Install the new release in library SM1V2R9M0 and directory '/Gumbo/ProdData/2A55SM1V2R9M0':

   ```
   RSTLICPGM  LICPGM(2A55SM1) DEV(device-name) LNG(2924)
              LIB(SM1V2R9M0) REPLACERLS(*NO)
              CODHOMEDIR('/Gumbo/ProdData/2A55SM1V2R9M0')
   ```

   Where "device-name" is the device where the media or image was mounted.

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

   ```
   DLTLICPGM  LICPGM(2A55SM1) RLS(V2R9M0) 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 IBM i. If this has already occurred, see the Software Installation Problems section of the *Trouble-Shooting* chapter of this manual.

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

Deleting SpoolMail

Follow these instructions to remove SpoolMail from IBM i:

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

   ```
   DLTLICPGM  LICPGM(2A55SM1) OPTION(*ALL)
   ```

These instructions delete an otherwise healthy installation of SpoolMail. If the installation has been damaged, follow the instructions for Installation Fails in the *Software Installation Problems* section of the *Trouble-Shooting* chapter of this manual.

Additional Installation Information

Additional detailed installation information and instructions can be found in *IBM i and related software > PDF file... > Installing, upgrading, or deleting IBM i and related software SC41-5120* topic in the IBM i Information Center at http://publib.boulder.ibm.com/eserver/ibmi.html.

Technical Support

If you encounter a problem with SpoolMail you should:

- Review the information in the Trouble Shooting chapter for a description of and solution to common problems.
- 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 support@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 email 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.

Report Manager and SpoolMail

Report Manager is a product that offers extensive spooled file manipulation capabilities, including the ability to deliver spooled files as email. The email delivery is limited however to plain ASCII text attachments and does not include the extensive conversion capabilities offered by SpoolMail.

SpoolMail is a product that offers extensive spooled file emailing capabilities, but does not provide spooled file splitting, and other capabilities offered by Report Manager.

To make the capabilities of SpoolMail available for use with Report Manager perform the following step:

1. Change the Report Manager job description RMRPTWTR to include library SPOOLMAIL 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:

```
CHGJOBD JOBD(RPTMGR/RMRPTWTR)
        INLLIBL(RPTMGR QTEMP QGPL SPOOLMAIL)
```

2. Add subscriptions to the reports that should email spooled files using SpoolMail. For example, to email stream files as Portable Document Format from report INV310 to RMT1 SYS1, run the following command:

```
ADDRPTSUB RPT(REPORTS/INV310) USER(*USRID)
          USRID(RMT1 SYS1) OUTQ(*NONE)
          SNDFMT(*EMAIL) TRANSFORM(*PDFLETTER)
```

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 from 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 code 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. Confirm that the authorized copy was correctly restored by running the Check Product Option (CHKPRDOPT) command.
6. 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.

Permanent Authorization Codes

When you purchase a product from us, or when we send you a new release of a product, you receive a permanent authorization code. Here we describe how to determine the information you must give us in order to receive a permanent authorization code and how to determine if the permanent authorization code you have received is correct for your installation.

The overwhelming majority of licenses purchased from us are **System Wide Licenses**. The other possibility, a **Partition Only License**, is described at the end of this section. For a System Wide License, permanent authorization codes are specific to a **Serial Number**, a **Processor Group**, and our product's **Release**. For a Partition Only License, permanent authorization codes are specific to a **Serial Number**, a **Partition ID Number**, the partition's **Maximum Processor Capacity**, and our product's **Release**.

In all cases, our permanent authorization codes are specific to a release of our product. The release of IBM i never makes a difference. To determine the release of our product installed on IBM i, run:

```
DSPPTF LICPGM(2A55SM1)
```

Where the possible LICPGM numbers are:

Number	Licensed Program
2A55SAM	Spool-a-Matic - Convert IBM i spooled files to PDF, RTF, HTML, etc. in the Integrated File System
2A55SM1	SpoolMail - Email IBM i spooled files as PDF, RTF, HTML, etc.
2A55XL1	Excel-erator - Convert IBM i database files into spreadsheets in the Integrated File System or as email
2A55SM2	Gumbo Mail - Send email from your applications
2A55DCR	Dicer - Merge/sort/split/duplicate spooled files
2A55RDA	Report Designer - Edit DDS, RPG and ILE/RPG print specifications
2A55RM1	Report Manager - Automate report distribution, bursting and spooled file management

The 5th line of the panel shows the release you are running. It is V2R9M0 in this example.

```
                          Display PTF Status
                                                    System:   GUMBO4
Product ID  . . . . . . . . . . . . . :   2A55SM1
IPL source  . . . . . . . . . . . . . :   ##MACH#A
Release . . . . . . . . . . . . . . . :   V2R9M0



Type options, press Enter.
  5=Display PTF details   6=Print cover letter   8=Display cover letter


     PTF                                                 IPL
Opt   ID      Status                                     Action


  (No PTFs found.)






                                                              Bottom
F3=Exit    F11=Display alternate view   F17=Position to   F12=Cancel
```

Note: It is possible that more than one release of a product is installed. To check, press [Enter]. If you are returned to the command line, only one release is installed.

All of our permanent authorization codes are serial number dependent. For a System Wide License they are also Processor Group dependent. To determine your system's serial number and processor group, run:

WRKLICINF

Lines 3 and 4 of the resulting panel show the serial number and processor group of your system.

```
                    Work with License Information            GUMBO4
                                                   04/06/10  18:08:32
System serial number . . . . . . . . . :   1234567
Processor group  . . . . . . . . . . . :   P10

Type options, press Enter.
  1=Add license key   2=Change   5=Display detail   6=Print detail
  8=Work with license users  ...


            License
Opt  Product    Term     Feature   Description
__    5761SS1  V6R1M0    5050     IBM i
__    5761SS1  V6        5051     IBM i
__    5761SS1  V6R1M0    5103     Media and Storage Extensions
__    5761SS1  V6R1M0    5112     PSF 1-45 IPM Printer Support
__    5761SS1  V6R1M0    5113     PSF 1-100 IPM Printer Support
__    5761SS1  V6R1M0    5114     PSF Any Speed Printer Support
__    5761SS1  V6R1M0    5116     HA Switchable Resources
                                                            More...
Parameters or command
===>
F3=Exit          F5=Refresh   F11=Display Usage Information   F12=Cancel
F17=Position to   F23=More options
(C) COPYRIGHT IBM CORP. 1980, 2007.
```

For a Partition Only License, permanent authorization codes depend on the Partition ID Number and maximum processor capacity. To determine the number and processor capacity of partitions on your system:

1. Start system service tools by running:

    STRSST

2. After entering a Service tools user ID and Service tools password, select the option to Work with system partitions.
3. Select the option to Display partition information.
4. Select the option to Display partition processing configuration.
5. Note the Partition ID Number and Total Processor Maximum.

```
                   Display Partition Processing Configuration
                                                      System:    GUMBO4
Number of system processors . . . . . . . . . . . :   2
Number of available system processors . . . . . . :   0
Size of system main storage (MB)  . . . . . . . . :   4096
Size of available system main storage (MB)  . . . :   0
Interactive feature available . . . . . . . . . . :   0    %


Partition               ---------Total Processors----------
Identifier  Name       Current / Pending  Minimum / Maximum
  0         PRIMARY         1 /   1             1 /   1
  1         SECONDARY       1 /   1             1 /   1










F3=Exit    F5=Refresh   F6=Print       F10=Main storage
F11=Display allocated I/O resources    F12=Cancel
```

Note: A Partition only license is not valid for a machine with only one partition.

Note: Our product's algorithm checks the authorization against the Total Processors Current value. If the maximum configured is larger than the license, the algorithm will grant usage as long as the current configured is with in the license's limit, and will issue a warning.

Chapter 3 Menu

What's In This Chapter

This chapter describes how to access the SpoolMail menu, and reviews the functions that can be performed from the menu.

Accessing Menu SPOOLMAIL

The SpoolMail commands and functions that you will use most often are collected on menu SPOOLMAIL. To access the menu use the Go To Menu (GO) command:

```
GO  MENU(SPOOLMAIL/SPOOLMAIL)
```

Library SPOOLMAIL is added to the product portion of the current thread's library list while the menu is displayed.

SPOOLMAIL Menu Options

```
SPOOLMAIL                        SpoolMail
                                                      System:   SM1
Select one of the following:


    1. Reference Manual


  SpoolMail
    2. Send Spool Mail                               SNDSPLMAIL
    3. Work with Gumbo Spooled Files                 WRKGSISPLF
    4. Work with Gumbo Output Queue                  WRKGSIOUTQ


  Verification and Set Up
   10. Verify the product is installed correctly     CHKPRDOPT
   11. Mail Verification And Set Up Menu
   12. Create Device Gumbo Printer                   CRTDEVGLP
   13. Change Device Gumbo Printer                   CHGDEVGLP
   14. Delete Device Gumbo Printer                   DLTDEVGLP


                                                        More...
Selection or command
===>


F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
© Copyright Gumbo Software, Inc. 1997, 2015. All Rights Reserved.
```

Option 1. Reference Manual

Provides access to the SpoolMail Programmer's Guide and Reference Manual.

Option 2. Send Spool Mail

The Send Spool Mail (SNDSPLMAIL) command converts an IBM i spooled file and sends it as email to a recipient.

Option 3. Work with Gumbo Spooled Files

The Work with Gumbo Spooled Files (WRKGSISPLF) command works like IBM i's Work with Spooled Files (WRKSPLF) command but provides additional options to access the functions of SpoolMail.

Option 4. Work with Gumbo Output Queue

The Work with Gumbo Output Queue (WRKGSIOUTQ) command works like IBM i's Work with Output Queue (WRKOUTQ) command but provides additional options to access the functions of SpoolMail.

Option 10. Verify the product is installed correctly

Installation verification checks to make sure that SpoolMail has been correctly installed by running IBM i's Check Product Option (CHKPRDOPT) command.

Option 11. Mail Verification And Set Up Menu

The Mail Verification And Set Up menu provides commands to help you set up mail on your system and verify that it is operating correctly.

Option 12. Create Device Gumbo Printer

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

Option 13. 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 14. 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 SpoolMail PTFs that have been applied to the software.

Option 62. Change SpoolMail Authorization

The Change SpoolMail Authorization (CHGSM1AUT) command changes the authorization code for SpoolMail. The command is used to extend a demonstration period or to permanently authorize SpoolMail for a system or a partition.

Option 63. Search Help Index

Search help index allows you to access the SpoolMail help index and search for specific information.

Option 64. Change SpoolMail Default

The Change SpoolMail Default (CHGSM1DFT) command changes values used by SpoolMail 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 emailing 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. Retrieve Page Data

The Retrieve Page Data (RTVPAGDTA) command retrieves data from a specific location in a spooled file. The requested data is returned in a Control Language (CL) program variable.

Option 69. Check SpoolMail Authorization

The Check SpoolMail Authorization (CHKSM1AUT) command executes SpoolMail's authorization verification function. This allows you to determine whether and how the product is authorized for use.

Option 70. Retrieve Gumbo PTF

The Retrieve Gumbo PTF (RTVGSIPTF) command checks a remote system for new product PTFs, and, if available, downloads and installs them.

Chapter 4 Set Up

What's In This Chapter

This chapter provides information on setting up your system to use SpoolMail. The chapter describes:

- How to select a quick start mail set up procedure.
- Quick start mail set up - Mailhub.
- Quick start mail set up - Direct Delivery.
- How to use the Verify Local SMTP (VFYLOCAL) command.
- How to use the Verify Mailhub Server (VFYMAILHUB) command.
- Manual mail set up steps
- Additional mail set up resources.
- Quick start - create a logical printer.

Selecting A Quick Start Procedure

SpoolMail creates email by constructing a MIME formatted message and passing it to IBM i for processing and delivery. If IBM i is already configured for email delivery, no additional set up is needed and you can skip this chapter. If SpoolMail is the first application on IBM i to generate email for delivery, there are IBM i configuration changes you must perform. SpoolMail includes a Mail Verification And Set Up menu (GO SPOOLMAIL/MAILSETUP) that provides tools to help you make them.

However, the scope of this chapter is limited. If any of the following apply to your installation, proceed directly to the Additional Mail Set Up Resources section for references to help in configuring IBM i:

- Domino for IBM i is installed on the system.
- Multiple TCP/IP interfaces (other than *LOOPBACK) are configured.
- Multiple email domains require support.

There are two quick start mail set up procedures for configuring IBM i mail services described in this chapter. The procedures are:

- Quick start mail set up - Mailhub
- Quick start mail set up - Direct Delivery.

You only perform, at most, one of these. To select the correct procedure consider the following simplified configurations:

```
                                    Figure: Mail Configurations
Local Mailhub
                              LAN   :   Internet
                                    :                               O
      +----------+       +----------+                         O  /|\  O
      |          |       | LAN      |   :                    /|\ / \ /|\
      |  IBM i   | ---> |   mailhub|   :   ------------->    / \      / \
      |          |       +----------+   :                     recipients
      +----------+            |         :
                   local      v         :
                              O         :
                          O  /|\  O     :
                         /|\ / \ /|\    :
                         / \      / \   :
                          recipients    :


Remote Mailhub
                              LAN   :   Internet
                                    :                               O
      +----------+                  :   +----------+           O  /|\  O
      |          |                  :   | ISP      |          /|\ / \ /|\
      |  IBM i   | ---------------> :   |   mailhub| --->     / \      / \
      |          |                  :   +----------+            recipients
      +----------+                  :
                                    :


Direct Delivery
                              LAN   :   Internet
                                    :                               O
      +----------+                  :                         O  /|\  O
      |          |                  :                        /|\ / \ /|\
      |  IBM i   | --------------------------------------->  / \      / \
      |          |                  :                          recipients
      +----------+                  :
                                    :
```
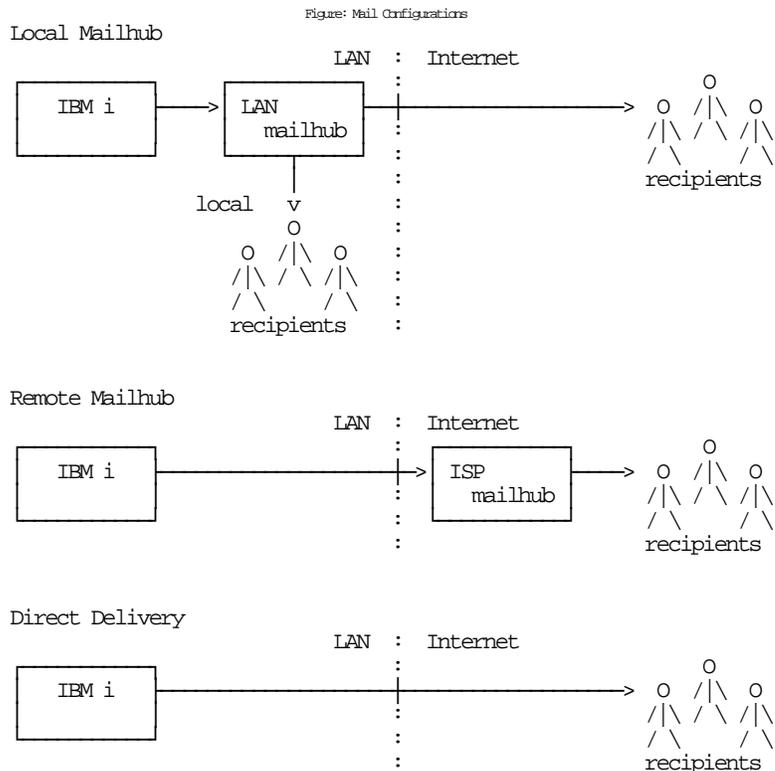
For most customers IBM i is attached to a local area network that also has a mail server attached to it. Typically, the mail server runs on a PC with Exchange, Domino, SendMail, or similar mail application installed. In addition, typically, this mail server should be responsible for delivering mail, and will server as the forwarding mailhub server for IBM i. If this is your situation, proceed to the Quick Start Mail Set Up - Mailhub section.

For some customers, the mail server belonging to their internet service provider (ISP) is used to deliver email. If this is your situation, proceed to the Quick Start Mail Set Up - Mailhub section.

If you do not have a mail server capable of serving as a mailhub, or do not have access to an ISP's server, you must configure IBM i to deliver email directly. Proceed to the Quick Start Mail Set Up - Direct Delivery section.

Quick Start Mail Set Up - Mailhub

To configure IBM i to use a forwarding mailhub server follow these steps. If any of the steps fail, move on to the detailed sections of this chapter.

1. Install SpoolMail on IBM i (see the Installation chapter for details).
2. Display the main menu (GO SPOOLMAIL/SPOOLMAIL).
3. Run the option to verify that SpoolMail is installed correctly.
4. Display the Mail Verification And Set Up menu.
5. Run option 12 to set up IBM i.
6. Determine the name and IP address of the mailhub.
7. Run option 14 to set up the mailhub specifying its name and IP.
8. Press F12 to return to the main menu.
9. Send a test to yourself using your "real" email address.

10. Check your email.

If after a reasonable time no email arrives, perform the following additional steps.

1. Add your "real" email address to your directory entry by running (this example uses "real" email address "billg@acme.com" and the directory entry "MYUSER MYSYSTEM"):

```
CHGDIRE USRID(MYUSER MYSYSTEM)
        MSFSRVLVL(*SYSMS) PREFADR(*SMTP)
        USRDFNFLD((SMTPAUSRID SMTP 'billg')
                 (SMTPDMN SMTP 'acme.com'))
```

Note: If you are still signed on as QSECOFR, start a second session and sign on with your regular user profile to perform the send.

2. Display the Mail Verification And Set Up menu.
3. Run option 61 to restart/purge local mail on IBM i.

Note: If IBM i is currently being used to generate email from another application, make sure the Clear SMTP during restart (SMTPPURGE) and Clear MSF during restart (MSFPURGE) parameters specify *NO to prevent email from being deleted.

4. Send a test to yourself taking by taking the default *CURRENT.
5. Check your email.

If after a reasonable time no email arrives, move on to the detailed sections of this chapter. For additional information, see the *Trouble-Shooting* chapter of this manual.

Quick Start Mail Set Up - Direct Delivery

If your installation does not include a mail server or if you do not have access to an ISP's mail server, you can configure IBM i to directly deliver email to the world at large using the following steps. If any of the steps fail, move on to the detailed sections of this chapter.

1. Install SpoolMail on IBM i (see the Installation chapter for details).
2. Display the main menu (GO SPOOLMAIL/SPOOLMAIL).
3. Run the option to verify that SpoolMail is installed correctly.
4. Display the Mail Verification And Set Up menu.
5. Run option 12 to set up IBM i.
6. Configure IBM i access to DNS (see Manual Mail Set Up Steps).
7. Remove previously configured mailhub and mail router (see Manual Mail Set Up Steps).
8. Update the public DNS records for your domain (see Manual Mail Set Up Steps).
9. Press F12 to return to the main menu.
10. Send a test to yourself using your "real" email address.
11. Check your email.

If after a reasonable time no email arrives, perform the following additional steps.

1. Add your "real" email address to your directory entry by running (this example uses "real" email address "billg@acme.com" and the directory entry "MYUSER MYSYSTEM"):

```
CHGDIRE USRID(MYUSER MYSYSTEM)
        MSFSRVLVL(*SYSMS) PREFADR(*SMTP)
        USRDFNFLD((SMTPAUSRID SMTP 'billg')
                  (SMTPDMN SMTP 'acme.com'))
```

   Note: If you are still signed on as QSECOFR, start a second session and sign on with your regular user profile to perform the send.

2. Display the Mail Verification And Set Up menu.
3. Run option 61 to restart/purge local mail on IBM i.

   Note: If IBM i is currently being used to generate email from another application, make sure the Clear SMTP during restart (SMTPPURGE) and Clear MSF during restart (MSFPURGE) parameters specify *NO to prevent email from being deleted.

4. Send a test to yourself taking by taking the default *CURRENT.
5. Check your email.

If after a reasonable time no email arrives, move on to the detailed sections of this chapter. For additional information, see the *Trouble-Shooting* chapter of this manual.

Using The SMTP Set Up Command

The Verify Local SMTP (VFYLOCAL) command performs automatic verification and set up of SMTP on IBM i. The command accepts a single parameter that determines if changes are made to IBM i. To verify IBM i without making any changes select option 11 on the Mail Verification And Set Up menu or run the following command:

```
VFYLOCAL SETUP(*NO)
```

To make changes to IBM i select option 12 on the Mail Verification And Set Up menu or run the following command:

```
VFYLOCAL SETUP(*YES)
```

In both cases SMTP verification is performed. Only if SETUP(*YES) is specified does the command try to perform set up functions. You must be authorized to perform all of the verification and set up functions or the command fails. You can insure that you are authorized to perform all functions by signing on as QSECOFR.

Note: If you prefer to manually perform the functions of this program see the Appendix for a detailed description.

A log of activity is created during verification and set up. To view the log run DSPJOB, take option 4 and display the last spooled file.

If errors were encountered, detailed information can be found in your joblog. To view the information generated by VFYLOCAL, run the following command after the command has completed:

```
DSPJOBLOG
```

When the joblog is displayed, press F10 to display detailed messages and F18 to position to the end of the log.

The recommended procedure is to run verification first and review the results before running automatic set up.

Using The Mailhub Set Up Command

The Verify Mailhub Server (VFYMAILHUB) command performs automatic verification and set up of a forwarding mailhub server for IBM i. The command accepts three parameters that determine if changes are made to IBM i and the identity of the mailhub. To verify the mailhub without making any changes select option 13 on the Mail Verification And Set Up menu or run the following command (substitute the name and IP address of your forwarding mailhub server for "host_name" and "ip"):

```
VFYMAILHUB RMTSYS(host_name) INTNETADR(ip) SETUP(*NO)
```

To make changes to IBM i select option 14 on the Mail Verification And Set Up menu or run the following command (substitute the name and IP address of your external mailhub for "host_name" and "ip"):

```
VFYMAILHUB RMTSYS(host_name) INTNETADR(ip) SETUP(*YES)
```

In both cases mailhub verification is performed. Only if SETUP(*YES) is specified does the command try to perform set up functions. You must be authorized to perform all of the verification and set up functions or the command fails. You can insure that you are authorized to perform all functions by signing on as QSECOFR.

Note: If you prefer to manually perform the functions of this program see the Appendix for a detailed description.

A log of activity is created during verification and set up. To view the log run DSPJOB, take option 4 and display the last spooled file.

If errors were encountered, detailed information can be found in your joblog. To view the information generated by VFYMAILHUB, run the following command after the command has completed:

```
DSPJOBLOG
```

When the joblog is displayed, press F10 to display detailed messages and F18 to position to the end of the log.

The recommended procedure is to run verification first and review the results before running automatic set up.

Manual Mail Set Up Steps

Depending on IBM i's, network configuration and your intended usage, there are several manual mail set up steps you may need to perform in order to use SMTP. These are described here.

Installing TCP Connectivity Utilities

In order to send email from IBM i, SMTP support must be installed. SMTP functions are delivered free of charge with IBM i as part of a separately installed licensed program product: 57xx-TC1 TCP/IP Connectivity Utilities. Detailed installation information and instructions can be found in *IBM i and related software > PDF file... > Installing, upgrading, or deleting IBM i and related software SC41-5120*.

Changing Local Host and Domain Names

SMTP uses IBM i's local host and domain name to identify itself to remote SMTP hosts to which it is sending mail. To configure the names:

- Run the Configure TCP/IP (CFGTCP) command.
- Select option 12 (Change TCP/IP domain information).
- Enter a host and domain name for IBM i.

As an example, we use **ofc.gumbo.com** as the domain name and the **mailout** as the host name on our machine. If your domain is widget.com you might use:

```
                    Change TCP/IP Domain (CHGTCPDMN)

Type choices, press Enter.

Host name  . . . . . . . . . . .    'mailout'

Domain name  . . . . . . . . . .    'ofc.widget.com'




Domain search list . . . . . . .    *DFT




Host name search priority  . . .    *LOCAL        *REMOTE, *LOCAL, *SAME
Domain name server:
  Internet address . . . . . . .    '192.0.2.1'
                                    '192.0.2.2'


                                                                 Bottom
F3=Exit   F4=Prompt   F5=Refresh   F10=Additional parameters   F12=Cancel
F13=How to use this display       F24=More keys
```

Creating a TCP Interface

A TCP interface establishes IBM i's identity (internet address) on a given line description. Typically, the line description for a local area network is used.

In order to add a TCP interface to a line description, you must determine the IP address and subnet mask to use. If you have a network administrator or other person responsible for assigning internet (IP) addresses, contact them. If you will connect IBM i directly to the Internet, you must request that your internet service provider assign you an IP address or you must request that the Internet Corporation for Assigned Names and Numbers (ICANN) assign you a network number. If you will not connect IBM i directly to the internet, and otherwise do not have an IP address for your system, you can use IP address "192.168.1.1" and Subnet Mask "255.255.255.0". This number is taken from the class B "192.168.0.0" network, which is reserved for internal networks as described in *RFC1597*. To add an interface after you have determined an IP address and subnet mask, run the following command:

```
ADDTCPIFC  INTNETADR(192.168.1.1) +
           LIND(line_description_name) +
           SUBNETMASK(255.255.255.0)
```

Substitute your values for the three parameters.

Adding Host Name To Host Table

In order to deliver email correctly IBM i's SMTP host name must be associated with an IP address of one its TCP interfaces. This can be accomplished through DNS or you can add a local host table entry. To add a host table entry for IP address "192.168.1.1" with host name mailout, run the following command:

```
ADDTCPHTE  INTNETADR('192.168.1.1') +
           HOSTNAME(('mailout'))
```

Substitute your values for the two parameters. If the IP address already exists in the host table, use Change TCP/IP Host Table Entry (CHGTCPHTE) command to add the additional host name to the IP address.

Configuring IBM i Access To DNS

When not using a mailhub, IBM i must access domain name system (DNS) servers to determine how to deliver email for a recipient. Typically, IP addresses for DNS servers are supplied by your internet service provider (ISP) or network administrator. If neither is available, a reasonable guess as to the IPs to use can be retrieved from a PC attached to the local area network that contains IBM i:

- [PC] Choose Start > Programs > Accessories > Command Prompt
- [PC] Run command:

  ```
  ipconfig /all [Enter]
  ```

- [PC] Note the IP addresses given for DNS Servers.

```
        Host Name . . . . . . . . . . . . : PC001
        Primary Dns Suffix  . . . . . . . :
        Node Type . . . . . . . . . . . . : Unknown
        IP Routing Enabled. . . . . . . . : No
        WINS Proxy Enabled. . . . . . . . : No
        DNS Suffix Search List. . . . . . : ofc.widget.com

Ethernet adapter Widget Net:

        Connection-specific DNS Suffix  . : ofc.widget.com
        Description . . . . . . . . . . . : Broadcom 802.11b/g WLAN
        Physical Address. . . . . . . . . : 00-11-22-33-44-55
        Dhcp Enabled. . . . . . . . . . . : Yes
        Autoconfiguration Enabled . . . . : Yes
        IP Address. . . . . . . . . . . . : 192.0.2.10
        Subnet Mask . . . . . . . . . . . : 255.255.255.192
        Default Gateway . . . . . . . . . : 192.0.2.1
        DHCP Server . . . . . . . . . . . : 192.0.2.132
        DNS Servers . . . . . . . . . . . : 192.0.2.1
                                            192.0.2.2
        Lease Obtained. . . . . . . . . . : Sunday, July 21, 2012 4:30:38 PM
        Lease Expires . . . . . . . . . . : Monday, July 22, 2012 4:30:38 PM

C:\Documents and Settings\Programmer>
```

To configure IBM i to use DNS servers and confirm correct operation:

- From the IBM i command line, type CHGTCPDMN and press F4.

- Enter the DNS IP addresses in the Domain name server: Internet address (INTNETADR) parameter, press enter.

```
                     Change TCP/IP Domain (CHGTCPDMN)

Type choices, press Enter.

Host name  . . . . . . . . . . .     'mailout'

Domain name  . . . . . . . . . .     'ofc.widget.com'



Domain search list . . . . . . .     *DFT




Host name search priority  . . .     *LOCAL         *REMOTE, *LOCAL, *SAME
Domain name server:
  Internet address . . . . . . .     '192.0.2.1'
                                     '192.0.2.2'



                                                                       Bottom
F3=Exit   F4=Prompt   F5=Refresh   F10=Additional parameters   F12=Cancel
F13=How to use this display       F24=More keys
```

This example uses the fictitious DNS IP addresses 192.0.2.1 and 192.0.2.2

- Run the command:

  ```
  ping ibm.com
  ```

- If you do not get the message "Unknown host, ibm.com" DNS is working correctly.

  Note: You may or may not get ping replies, but that is not important.

Removing Previously Configured Mailhub and Mail Router

IBM i will deliver email directly if a mailhub and mail router are not configured. To check or remove the mailhub and mail router specifications, prompt the Change SMTP Attributes (CHGSMTPA) command, page down once and change the Mail router (MAILROUTER) parameter to *NONE:

```
                      Change SMTP Attributes (CHGSMTPA)

Type choices, press Enter.

User ID delimiter  . . . . . . .    '.'            *SAME, *DFT, ?, =, ., &, $...
Mail router  . . . . . . . . . .    *NONE



Coded character set identifier      00819        1-65533, *SAME, *DFT
Outgoing EBCDIC/ASCII table:
  Outgoing EBCDIC/ASCII table  .    *CCSID         Name, *SAME, *CCSID, *DFT
    Library  . . . . . . . . .                     Name, *LIBL, *CURLIB
Incoming ASCII/EBCDIC table:
  Incoming ASCII/EBCDIC table  .    *CCSID         Name, *SAME, *CCSID, *DFT
    Library  . . . . . . . . .                     Name, *LIBL, *CURLIB
Firewall . . . . . . . . . . . .    *YES           *SAME, *YES, *NO
Journal  . . . . . . . . . . . .    *YES           *SAME, *YES, *NO
Process all mail through MSF . .    *YES           *SAME, *YES, *NO
Percent routing character  . . .    *YES           *SAME, *YES, *NO
                                                                       More...
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

If you are running V5R4M0 skip this step. If you are running V6R1M0 or later, page down three more times and change the Forwarding mailhub server (FWDHUBSVR) parameter to *NONE:

```
                      Change SMTP Attributes (CHGSMTPA)

Type choices, press Enter.

Override reject connect list . .    *NO            *SAME, *NO, *YES
Allow bare line feed . . . . . .    *YES           *SAME, *NO, *YES
Verify identification  . . . . .    *NO            *SAME, *NO, *YES
Allow authentication . . . . . .    *NONE          *SAME, *RELAY, *LCLRLY, *NONE
Verify MSF messages  . . . . . .    *NO            *SAME, *YES, *NO
Verify from user . . . . . . . .    *ALL           *SAME, *ALL, *LIST, *NONE
Forwarding mailhub server  . . .    *NONE







                                                                       Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

Updating Public DNS Records

When directly delivering email to the world at large, IBM i contacts each recipient's mail server and introduces itself using the fully qualified SMTP host name configured using the Change TCP/IP Domain (CHGTCPDMN) command. In the example below, the machine introduces itself as mailout.ofc.widget.com.

```
                        Change TCP/IP Domain (CHGTCPDMN)

Type choices, press Enter.

Host name  . . . . . . . . . . .      'mailout'

Domain name  . . . . . . . . . .      'ofc.widget.com'



Domain search list . . . . . . .      *DFT



Host name search priority  . . .      *LOCAL         *REMOTE, *LOCAL, *SAME
Domain name server:
  Internet address . . . . . . .       '192.0.2.1'
                                       '192.0.2.2'


                                                                      Bottom
F3=Exit    F4=Prompt   F5=Refresh   F10=Additional parameters   F12=Cancel
F13=How to use this display        F24=More keys
```

When a recipient's mail server is contacted by IBM i, the mail server sees the traffic as coming from the publicly visible IP address of your connection. For example, the external IP address of your DSL modem. To determine the IP address seen externally, go to http://network-tools.com. The IP address shown in the search box is the external public IP address of your connection.

Increasingly, mail servers are confirming the identity of machines sending email by performing a DNS look up on the fully qualified host name sent during the introduction, mailout.ofc.widget.com in this example. If the IP address returned by DNS is not the same as the visible IP address the traffic is coming from, email is rejected or discarded as spam.

To insure that IBM i passes this test, you must add, or have your domain registrar add, an address record for IBM i's fully qualified SMTP host name to the DNS records for your domain. In this example:

```
mailout.ofc.widget.com.  IN A nnn.nnn.nnn.nnn
```

Is added to the DNS records for the domain widget.com where nnn.nnn.nnn.nnn is the publicly visible IP address determined above. This usually requires contacting your domain name registrar or the ISP hosting your domain, and is not an IBM i setting.

Setting Up Local Users

A local user is someone who has a user profile (sign-on) on IBM i. You should set up each local user who will be sending email to insure that the apparent "From:" address in the email will be correct and to insure that replies reach the sender. You do not need to set up local users who will not be sending mail. To configure hypothetical user JOE SALES (user profile JOES) as joe@acme.com, perform the following:

- If Joe already has a directory entry run:

```
CHGDIRE USRID(JOE SALES) MSFSRVLVL(*SYSMS)
        PREFADR(*SMTP)
        USRDFNFLD((SMTPAUSRID SMTP 'joe')
                 (SMTPDMN SMTP 'acme.com'))
```

- If Joe does not have a directory entry run:

```
ADDDIRE USRID(JOE SALES) USRD('Sample entry')
         USER(JOES) SYSNAME(*LCL)
         MSFSRVLVL(*SYSMS) PREFADR(*SMTP)
         USRDFNFLD((SMTPAUSRID SMTP 'joe')
                   (SMTPDMN SMTP 'acme.com'))
```

The user is now ready to send mail from IBM i as joe@acme.com. For more details or information on setting up remote users, see the *Email Addresses* section of the *Implementation* chapter of this manual.

Changing The System Start Program

You may wish to check your system's start up program to insure that the required subsystems are started automatically when IBM i IPLs. The following steps are recommended:

- Insure that the SMTP server starts automatically when the Start TCP/IP (STRTCP) command is run:

```
CHGSMTPA AUTOSTART(*YES)
```

- Insure that your system start up program starts TCP/IP by including the command:

```
STRTCP
```

- Insure that your system start up program starts the IBM i Mail Server by including the command:

```
STRMSF
```

Changing The Time Zone System Value

The time stamp placed in the email is based on the QTIMZON system value. Since most IBM i's have the correct time, an incorrect time stamp usually indicates an incorrect time zone setting. For information on correctly setting the QTIMZON system value see the *System management > Time management* topic in the IBM i Information Center at http://publib.boulder.ibm.com/eserver/ibmi.html.

Note: QTIMZON also affects the timestamp applied to files in the Integrated File System (IFS).

Changing The SMTP Port Number

Some installations use an SMTP port number other than the well-known port 25. You can control the port number used by IBM i's SMTP stack by running the Configure TCP/IP (CFGTCP) command, selecting option 21. Configure related tables, then selecting option 1. Work with service table entries.

Additional Mail Set Up Resources

The information in this chapter was drawn and condensed from the IBM i Information Center. You can find additional detail and more comprehensive coverage of IBM i configuration by going to the *Networking > TCP/IP applications, protocols, and services > E-mail* topic in the IBM i Information Center at http://publib.boulder.ibm.com/eserver/ibmi.html.

For Domino on IBM i users, our software uses IBM i's SMTP services to deliver mail. Valuable information on setting up Domino's and IBM i's SMTP stack to coexist can be found in the IBM Redbook

V5 TCP/IP Applications on the IBM eServer iSeries Server SG24-6321 available at
http://publib.boulder.ibm.com/eserver/ibmi.html.

Quick Start - Create A Logical Printer

Once you are successfully sending email you can automate the process by creating a logical printer.

1. Run option 12 and specify a printer name and port (use 1 if you are not sure).
2. Edit the SNDSPLMAIL command when prompted with SEU. Specify the recipient.
3. Move a spooled file to the output queue and release it.

Chapter 5 Implementation

What's In This Chapter

This chapter describes how to implement SpoolMail in your environment. The chapter:

- Gives an overview of implementation choices.
- Describes changing programs to send email.
- Describes manually sending email.
- Describes creating a Gumbo logical printer.
- Describes sharing a Gumbo logical printer on the network.
- Describes authority adoption by Gumbo logical printers.
- Describes integration with Report Manager.
- Describes email address details.
- Describes adding line breaks to the message.
- Describes digitally signing the message.
- Describes adding user defined data to a spooled file.
- Describes useful spooled file information.
- Describes adding bookmarks to PDF files.
- Describes digitally signing PDF files.
- Describes included example source code.
- Describes a CL coding tip.
- Describes changing command defaults.

Overview

The first step in implementing SpoolMail is to set up IBM i's mail functions if this has not already been done. Refer to the Set Up chapter in this manual for detailed instructions. After set up you are ready to begin implementation.

The main function of SpoolMail is accessed by running the Send Spool Mail (SNDSPLMAIL) command. The command takes a spooled file and an email address as input, converts the spooled file and sends it to the recipient. To implement SpoolMail in your environment you have four basic choices:

1. Modify each program that creates spooled files that will be emailed to directly run the Send Spool Mail (SNDSPLMAIL) command.

Pros	The spooled file is always sent as soon as it is created.
Cons	Programs must be modified and recompiled.

2. Manually run the Send Spool Mail (SNDSPLMAIL) command from a command line or using option 14 from the Work with Gumbo Spooled Files (WRKGSISPLF) or Work with Gumbo Output Queue (WRKGSIOUTQ) 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 Send Spool Mail (SNDSPLMAIL) command for each spooled file placed in the printer's output queue.

Pros	No program changes, no manual intervention.
Cons	Fixed email address, limited flexibility compared to Report Manager.

4. Automatically run the Send Spool Mail (SNDSPLMAIL) command using *GUMBO's* Report Manager.

Pros	No program changes, no manual intervention, extensive distribution and bursting options.
Cons	Additional product required.

In all cases, using IBM i distribution lists can simplify the sending of email. See the section on Using Distribution Lists later in this chapter. Also, see the following sections for a detailed discussion of the choices.

Changing Programs

SpoolMail can be implemented by changing the programs that create spooled files to send 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 send the spooled file to the distribution list INV320 REPORT:

```
        .
        .
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)
SNDSPLMAIL FILE(QSYSPRT) TOUSRID(INV320 REPORT)
RLSSPLF   FILE(QSYSPRT) SPLNBR(*LAST) /* Now it can print */
        .
        .
```

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

We recommend using a distribution list with the same name as the program. This moves the distribution details outside of the program and the list of recipients can be updated without changing the program again.

Manually Sending Email

SpoolMail can be implemented by assigning an operator the task of manually sending spooled files. SpoolMail's Work with Gumbo Spooled Files (WRKGSISPLF) or Work with Gumbo Output Queue (WRKGSIOUTQ) commands provide a convenient means of accomplishing this. Suppose the operator should send all spooled files created by user QPGMR and program INV320 in the NIGHTBATCH output queue to the distribution list INV320 REPORT. The following command displays a list of spooled files created by user QPGMR:

```
WRKGSISPLF SELECT(QPGMR)
```

The operator enters option 14 for each spooled file to send and enters the recipient 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=Email   15=Merge


                          Device or  User                Total   Cur
Opt  File       User      Queue      Data        Sts     Pages   Page
14   QSYSPRT    QPGMR      NIGHTBATCH INV320      RDY       1
14   QSYSPRT    QPGMR      NIGHTBATCH INV320      RDY       1
     QPJOBLOG   QPGMR      QEZJOBLOG  TEST        RDY       2
     QPJOBLOG   QPGMR      QEZJOBLOG  PRT02       RDY       1
14   QSYSPRT    QPGMR      NIGHTBATCH INV320      RDY       1
14   QSYSPRT    QPGMR      NIGHTBATCH INV320      RDY       1




                                                          Bottom
Parameters for options or command
===> TOSMTPNAME(billg@acme.com)
F3=Exit F4=Prompt  F5=Refresh  F9=Retrieve  F11=Change view  F12=Cancel
F17=Top F18=Bottom  F22=Printers
© Copyright Gumbo Software, Inc. 1997, 2015. All Rights Reserved.
```

By pressing enter, the spooled files are sent to billg@acme.com. The spooled files remain on the system.

Creating A Gumbo Logical Printer

SpoolMail can be implemented by using the Create Device Gumbo Printer (CRTDEVGLP) command to create one or more Gumbo logical printers.

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 IBM i's writer commands (WRKWTR, STRPRTWTR, ENDWTR, HLDWTR, etc.) and IBM i'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, move your spooled files to the printer's output queue and release them to initiate processing.

Sharing A Gumbo Logical Printer

A Gumbo logical printer is a printer device that performs SpoolMail'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. [PC] Open a connection to your system using Navigator for i.

2. [PC] Expand Network.
3. [PC] Expand Servers.
4. [PC] Click TCP/IP to retrieve a list of TCP/IP servers available.
5. [PC] Right-click IBM i NetServer and select Open.
6. [PC] Right-click Shared Objects and select New and then Printer.
7. [PC] Use the General Properties page and configure:
    o   Share name: GLP01
    o   Description: SpoolMail Printer
    o   Output queue: GLP01
    o   Output queue library: QUSRSYS
    o   Printer driver: (leave blank)
    o   Spooled file type: Advanced function printing
8. [PC] Click OK.

Note: The Navigator for i 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. [PC] From the Windows Control Panel, double click Printers.
2. [PC] Double click Add Printer.
3. [PC] Click next.
4. [PC] Select Network printer and click next.
5. [PC] Select Type printer name, enter \\server-name\GLP01 and click next.

    Note: server-name is the name by which IBM i is known to the Windows Network Neighborhood.

6. [PC] When the Connect to Printer pop-up appears click OK.
7. [PC] When the Add Printer Wizard pop-up appears, double click Manufactures: IBM.
8. [PC] Double click IBM AFP 300. Click next.

    Note: If you do not have the AFP print drivers they can be loaded using IBM i Access Set Up.

9. [PC] Click Finish.

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

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

Gumbo Logical Printer Authority Adoption

SpoolMail programs SMC_40001 and SMC_40002 adopt owner authority as a convenience for our customers. The programs are the "print device driver programs" called by IBM i when a print writer is driving a "Gumbo Logical Printer". i.e. if you are not using Gumbo logical printers you can safely remove authority adopt.

During start up the programs determine the environment by inspecting the device description, retrieving source code from the associated source file and adding the product's library to the job's library list. In operation, the programs are responsible for receiving IBM i's call to process a spooled file, marshaling the passed data, running the device's command, and responding to IBM i.

The actions performed are described in IBM's documentation for API QSPSETWI and print device driver exit program.

IBM i starts all print writers under the QSPLJOB user profile. You can remove the adopt by granting QSPLJOB authorities to perform the required actions. You can determine what these are by removing the adopt, starting the writer and finding the authority failures in the job log. Grant the needed authority, end and restart the writer, and repeat until no more failures occur.

Integration With Report Manager

GUMBO's Report Manager is a software utility that automates report distribution and spooled file management on the IBM System i. SpoolMail 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 email spooled files created by INV320 to the distribution list INV320 REPORT, run the Add Report Subscription command:

```
ADDRPTSUB  RPT(INV320) USER(*USRID) USRID(INV320 REPORT)
           OUTQ(*NONE) SNDFMT(*EMAIL)
```

Each time an INV320 spooled file is processed, it is emailed to INV320 REPORT in addition to the deliveries for other subscribers.

Email Addresses

There are three choices for addressing mail created by SpoolMail, direct SMTP addressing, special values, and directory entries stored in the system distribution directory. With direct SMTP addressing, you enter the email address directly on the parameter, no additional address set up is required. SpoolMail supports the full range of email address formats, including route specification and *RFC3490 Internationalizing Domain Names in Applications (IDNA)*. Valid formats for email addresses include:

- 'mali@acme.com'
- '<mali@acme.com>'
- 'Mohammed Ali <mali@acme.com>'
- '"Mohammed Ali" <mali@acme.com>'
- 'Mohammed Ali (I am the Greatest) <mali@acme.com>'

In all of these examples the message is delivered to the mailbox mali@acme.com.

Address Resolution For Special Values

SpoolMail supplies several special values for specifying email addresses. For example, *CURRENT is the default value on the From (originator) Address parameter.

SpoolMail uses the following steps to resolve an email address for special values that imply an IBM i user profile.

- If the user profile implied by the special value is enrolled in the system distribution directory and the entry contains an email address the email address is used.
- If the user profile implied by the special value is enrolled in the system distribution directory and the entry does not contain an email address an IBM i style address is generated in the form: usrid?address@host.domain.
- If the user profile implied by the special value is not enrolled in the system distribution directory an email address is generated in the form: userprofile@host.domain

Note: In the above, host and domain are taken from the values entered on the CFGTCP option 12 panel.

Therefore, to have the correct email address resolved, you should add or update a system distribution directory entry for each user profile that will be referenced by the special values you will use. Usually this is every user profile that will send email.

To see the list and meaning of special values supported on a particular parameter, prompt the command and display help information by pressing F1.

Setting Up Directory Entry Email Addresses For Local Users

IBM i's system distribution directory can contain addressing information for users. Directory entries can be created for users who are local to the system (have an IBM i user profile) and for users who are remote (do not have an IBM i user profile). Local users can receive their mail from the system using IBM i's POP server or from a remote mail application such as Exchange. You should set up each local user who will be sending email to insure that the apparent "From:" address in the email will be correct and to insure that replies reach the sender. To add a directory entry for user profile **MYUSER**, run the following command: (for this example, assume the user's email address is billg@acme.com):

```
ADDDIRE USRID(MYUSER MYSYSTEM) USRD('Sample entry')
        USER(MYUSER) SYSNAME(*LCL)
        MSFSRVLVL(*SYSMS) PREFADR(*SMTP)
        USRDFNFLD((SMTPAUSRID SMTP 'billg')
                  (SMTPDMN SMTP 'acme.com'))
```

Note: If you are running Lotus Domino for IBM i, run:

```
ADDDIRE USRID(MYUSER MYSYSTEM) USRD('Sample entry')
        USER(MYUSER) SYSNAME(*LCL)
        MSFSRVLVL(*DOMINO) PREFADR(*SMTP)
        USRDFNFLD((SMTPAUSRID SMTP 'billg')
                  (SMTPDMN SMTP 'acme.com'))
```

To update an existing directory entry for user profile **MYUSER**, run the following command:

```
CHGDIRE USRID(MYUSER MYSYSTEM)
        MSFSRVLVL(*SYSMS) PREFADR(*SMTP)
        USRDFNFLD((SMTPAUSRID SMTP 'billg')
                  (SMTPDMN SMTP 'acme.com'))
```

Setting Up Directory Entry Email Addresses For Remote Users

You do not need to set up remote user in order to send them email, but it will enable you to use distribution lists. To add a directory entry for a remote user who will receive email mail from IBM i, run the following command (for this example, assume the user's email address is johnp@acme.com):

```
ADDDIRE USRID(RMT1 EMAIL) USRD('Sample entry 2')
        USER(*NONE) SYSNAME(TCPIP)
        MSFSRVLVL(*SYSMS) PREFADR(*SMTP)
```

```
            USRDFNFLD((SMTPAUSRID SMTP 'johnp')
                      (SMTPDMN SMTP 'acme.com'))
```

Note: The choice of USRID(RMT1 EMAIL) is arbitrary, select names that are convenient. The system name must be **TCPIP**.

To add a directory entry for a Domino user who does not have an IBM i user profile, run the following command (for this example, assume the user's email address is suej@acme.com):

```
ADDDIRE USRID(DOMINO EMAIL) USRD('Sample entry 3')
        USER(*NONE) SYSNAME(TCPIP)
        MSFSRVLVL(*DOMINO) PREFADR(*SMTP)
        USRDFNFLD((SMTPAUSRID SMTP 'suej')
                  (SMTPDMN SMTP 'acme.com'))
```

Note: The choice of USRID(DOMINO EMAIL) is arbitrary, select names that are convenient. The system name must be **TCPIP**.

Using Distribution Lists

Once you have directory entries set up you can also set up distribution lists. These are lists of recipients (both local and remote) that can be maintained independently of the programs that use the lists. By sending to a distribution list, you send to each entry on the list.

Like directory entries, distribution list IDs have two parts. To make it convenient to manage the system, set up a naming convention for list IDs; for example, INV320 REPORT and INV330 REPORT could be list IDs for recipients of the INV320 and INV330 reports respectively. Such a convention allows lists to be easily associated with their use.

Suppose that the INV320 report should be sent to billg@acme.com and to johnp@acme.com. To create a distribution list to reflect this, run the following commands:

1. Create the distribution list:

```
CRTDSTL LSTID(INV320 REPORT)
        LSTD('INV320 report distribution')
```

2. Add 2 entries to the distribution list:

```
ADDDSTLE LSTID(INV320 REPORT)
         USRID((MYUSER MYSYSTEM) (RMT1 EMAIL))
```

You are now ready to send to the two users with one command by specifying the **To (distribution list)** parameter:

```
(other command parameters) ... TOUSRID(INV320 REPORT)
```

Adding Line Breaks to the Message
When Using *TEXTPLAIN

The following CL program fragment shows how to create a message variable that contains a line break (carriage return/line feed pair):

```
        ...
DCL VAR(&MSG) TYPE(*CHAR) LEN(2048)
DCL VAR(&CRLF) TYPE(*CHAR) LEN(2) VALUE(X'0D25')
DCL VAR(&LIN1) TYPE(*CHAR) LEN(72) VALUE('First line.')
DCL VAR(&LIN2) TYPE(*CHAR) LEN(72) VALUE('Second line.')
        ...
CHGVAR VAR(&MSG) VALUE(&LIN1 |< &CRLF |< &LIN2)
        ...
```

The resulting message is:

```
First line.
Second line.
```

The equivalent RPG is:

```
        ...
C                 move      x'0d25'      crlf            2
C                 movel     'First line.' lin1          72
C                 movel     'Second line.'lin2          72
        ...
C                 eval      msg = %trimr(lin1) + crlf + lin2
        ...
```

When Using *TEXTHTML

The following CL program fragment shows how to create a message variable that contains a line break.

```
        ...
DCL VAR(&MSG) TYPE(*CHAR) LEN(2048)
DCL VAR(&BR) TYPE(*CHAR) LEN(2) VALUE('<br>')
DCL VAR(&LIN1) TYPE(*CHAR) LEN(72) VALUE('First line.')
DCL VAR(&LIN2) TYPE(*CHAR) LEN(72) VALUE('Second line.')
        ...
CHGVAR VAR(&MSG) VALUE(&LIN1 |< &BR |< &LIN2)
        ...
```

The resulting message is:

```
First line.
Second line.
```

The equivalent RPG is:

```
        ...
C                 move      '<br>'       br              4
C                 movel     'First line.' lin1          72
C                 movel     'Second line.'lin2          72
        ...
C                 eval      msg = %trimr(lin1) + br + lin2
        ...
```

Digitally Signing The Message

Email produced by SpoolMail can optionally be digitally signed using S/MIME Signed Message format. S/MIME (Secure / Multipurpose Internet Mail Extensions) is a standard for public key encryption and signing of email encapsulated in MIME. A signed message is an ordinary message with a digital signature added by the sender. The signature has two purposes: it identifies the sender, and it verifies that the content of the message has not been altered since the message was sent.

You create digitally signed email by specifying an **Application ID** when the email is created. There are two ways to accomplish this: at the command level and at the system (or LPAR) level. The command level overrules the system level. For command level, specify an **Application ID** directly on the send command's new **Signing key** (SGNKEY) parameter. For the system level, specify an **Application ID** on the CHGSM1DFT command's new **Signing key** (SGNKEY) parameter.

The shipped default values for the **Signing key** (SGNKEY) parameters are *DEFAULT and *NONE respectively.

Application ID refers to the name you have given to a digital certificate when placing it in the *OBJECTSIGNING Certificate Store using IBM i's Digital Certificate Manager (DCM). DCM is option 34 of IBM i. You can determine if DCM has been installed by running the Display Software Resources (DSPSFWRSC) command.

Complete information on setting up DCM, creating and storing certificates and adding **Application IDs**, can be found in the *Security > Digital Certificate Manager* topic in the IBM i Information Center at http://publib.boulder.ibm.com/eserver/ibmi.html.

Adding User Defined Data

The Send Spool Mail (SNDSPLMAIL) command can retrieve the To (recipient) (TOSMTPNAME) parameter which is the recipient's email address and/or the From (originator) (FROM) parameter from data stored in a spooled file's user defined data parameter. The following CL code fragment shows how to store the recipients email address 'joe@widget.com' and the sending user profile INFO in a spooled file's user defined data field and reference it on the Send Spool Mail (SNDSPLMAIL) command:

```
        .
        .
OVRPRTF   FILE(QSYSPRT) HOLD(*YES) /* Can't let it print */ +
          USRDFNDTA('MAILTAG(joe@widget.com) MAILSENDER(INFO)')
CALL      PGM(INVLIB/INV320)
SNDSPLMAIL FILE(QSYSPRT) TOSMTPNAME(*MAILTAG) +
          FROM(*MAILSENDER)
RLSSPLF   FILE(QSYSPRT) SPLNBR(*LAST) /* Now it can print */
DLTOVR    FILE(QSYSPRT)
        .
        .
```

Useful Spooled File Information

IBM i provides powerful printing capabilities collectively known as AFP (Advanced Function Presentation). If you use IPDS printers you also need PSF/400. Otherwise, the base operating system gives you everything you need to take advantage of the power of AFP. For example, you can create overlays (electronic forms) to replace preprinted forms and print invoices on plain paper on your laser printers. Detailed information on AFP can be found in the *Printing > Advanced Function Presentation (AFP)* topic of the IBM i Information Center at http://publib.boulder.ibm.com/eserver/ibmi.html.

The single best source that we've found for information on all aspects of IBM i printing is the Redbook *Printing V SG24-4389* (and its replacement *Printing VI SG24-6250*). The books are available for download in the PDF format at http://www.redbooks.ibm.com.

The Redbook supplements the standard reference documents on printing by providing more specific "how to" information, such as diagrams, programming samples, and working examples. We find that it pulls together the information from other manuals and fits the pieces together in an understandable way.

Creating Overlays and Page Segments

InfoPrint's (formerly IBM's®) AFP Printer Driver is a very useful piece of software that allows you to create IBM i overlays and page segments by "printing" from any PC based application. Best of all, it is free and available for download at www.infoprintsolutionscompany.com, search on "AFP Printer Driver" or Google '"AFP Printer Driver for Windows" download site:ibm.com'. In addition, Google *AFP AS/400*

Programming Sampler which contains useful tools for compiling the overlays and page segments on IBM i. The sampler.savf was last spotted at ftp://ftp.software.ibm.com/printers/products/as400

Additional information is available from the IBM Software Knowledge Base Document Number 5184341, *Creating AFP Resources Using the IBM AFP Printer Drivers*.

Our experience shows that you get the best results using a smaller is better approach to creating overlays and page segments. Trim as much as possible and position instead of creating a page size overlay or page segment. Use the lowest resolution, color depth, etc. that gives acceptable results.

*LINE and *AFPDSLINE Data

Our spooled file conversions do not process spooled files with printer device type *LINE or *AFPDSLINE. However IBM i allows you to convert these to pure *AFPDS data which can be processed (most conversions). There are two methods for accomplishing this:

1. The printer file's CVTLINDTA() parameter while creating the spooled file.
2. Respooling an existing *LINE or *AFPDSLINE spooled file using CRTAFPDTA/PRTAFPDTA commands.

See Redbook *Printing VI SG24-6250* for details and examples.

Adding Bookmarks To PDF Files

When converting spooled files to PDF with SpoolMail you can specify that bookmarks are to be included in the generated stream file. Bookmarks provide easy navigation to specific portions of the report. When a bookmark is clicked, Adobe's Acrobat viewer positions the file directly to the page the bookmark references.

The inclusion of bookmarks is controlled by the "PDF bookmark style" PDFBKMSTY() and "PDF bookmark data source" PDFBKMSRC() command parameters which specify what data to use for bookmarking and how the bookmarks are presented.

Consider the following sample pages from a spooled file:

Figure: Sample Spooled File Pages

```
Invoice: 1102        Page: 537
SalesRep: C775

Invoice: 1023        Page: 467
SalesRep: C775

Invoice: 1009        Page: 321
SalesRep: C775

Invoice: 1008        Page: 254
SalesRep: C775

... .............. .......
... .............. .......
... .............. .......
... .............. .......
... .............. .......
... .............. .......
... .............. .......
... .............. .......
```
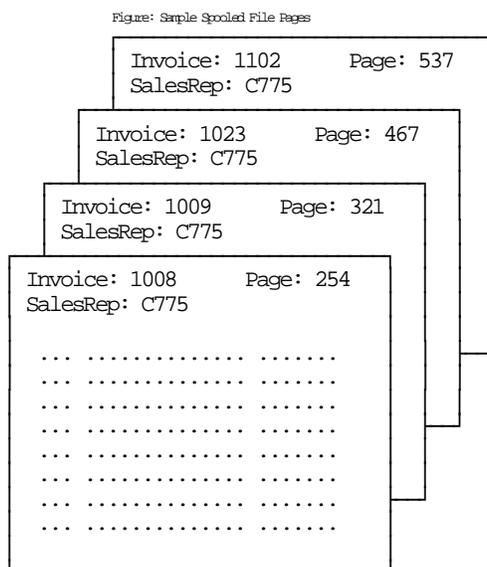
Note: All but 4 pages were omitted for brevity.

Specifying line=2, position=12, length=4 as name 'Rep No.' and line=1, position=11, length=4 as 'Invoice' with one level of bookmarking:

```
PDFBKMSTY(*ONELEVEL)
PDFBKMSRC((2 12 4 'Rep No.') (1 11 4 'Invoice'))
```

Generates the following bookmarks in the PDF:

```
        ┌──Invoice
        │     ├──1008
        │     ├──1009
        │     ├──1023
        │     └──1102
        │
        └──Rep No.
              ├──C775
                    ├──254
                    ├──321
                    ├──467
                    └──537
```
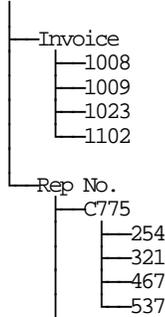
Using *TWOLEVEL instead of *ONELEVEL generates (the invoice top level bookmark has been omitted from the diagram for brevity):

```
        ┌──Invoice
        │    (detail omitted)
        │
        └──Rep No.
              ├──C775
                    ├──Invoice
                    │     ├──1008
                    │     ├──1009
                    │     ├──1023
                    │     └──1102
                    └──Page
                          ├──254
                          ├──321
                          ├──467
                          └──537
```
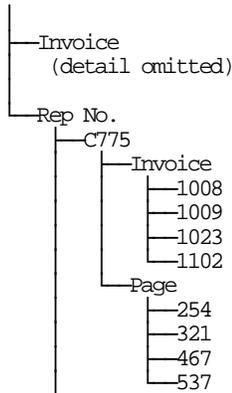
For more details on specifying data sources see the PDFBKMSRC() command parameter description.

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". SpoolMail 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                             DOCIDXTAG('Policy Number' +
A                                '43127' PAGE)
              ...
— or —
              ...
A         R RECORD2
A                                DOCIDXTAG(&NAM &VAL PAGE)
A         NAM        20A  P
A         VAL        10A  P
              ...
```

For complete details see the *Programming > DDS > DDS for printer files* topic in the IBM i Information Center at http://publib.boulder.ibm.com/eserver/ibmi.html.

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 you to define a group of pages and assign them a name. Examples names would be "POLICY NUMBER 12345" or "CUSTOMER NUMBER 67890". SpoolMail 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                             STRPAGGRP('Policy Number +
A                                43127')
              ...
— or —
              ...
A         R RECORD2
A                                STRPAGGRP(&NAM)
A         NAM        20A  P
              ...
```

For complete details see the *Programming > DDS > DDS for printer files* topic in the IBM i Information Center at http://publib.boulder.ibm.com/eserver/ibmi.html.

Digitally Signing PDF Files

PDF files produced by SpoolMail can be, optionally, digitally signed. The signature included in the PDF document allows the identity of the author to be validated and provides additional assurance that the PDF document has not been tampered with after it was signed.

You create digitally signed PDF documents by specifying an **Application ID** when the document is created. There are two ways to accomplish this: at the command level and at the system (or LPAR) level. The command level overrules the system level. For command level, specify an **Application ID** directly on the command's **PDF document signing key** (PDFSGNKEY) parameter. For the system level, specify an **Application ID** on the CHGSM1DFT command's **PDF document signing key** (PDFSGNKEY) parameter.

The shipped default values for the **PDF document signing key** (PDFSGNKEY) parameters are *DEFAULT and *NONE respectively.

Application ID refers to the name you have given to a digital certificate when placing it in the *OBJECTSIGNING Certificate Store using IBM i's Digital Certificate Manager (DCM). DCM is option 34 of IBM i. You can determine if DCM has been installed by running the Display Software Resources (DSPSFWRSC) command.

For complete information on setting up DCM, creating and storing certificates and adding **Application IDs**, see the *Security > Digital Certificate Manager* topic in the IBM i Information Center at http://publib.boulder.ibm.com/eserver/ibmi.html.

Example Source Code

Additional information, and example source code is contained in file SPOOLMAIL/SMSOURCE. The file includes:

Address Mapping Program CL Skeleton

The address mapping program skeleton demonstrates the correct parameter list and is a good starting point for creating a new CL based address mapping program for the SNDSPLMAIL command.

User Defined Option

The spooled file user defined option program demonstrates the correct parameter list and is a good starting point for creating a new CL based option to run the SNDSPLMAIL command from IBM supplied spooled file panels.

CL Coding Tip

Many of our commands accept a variable number of values for a given parameter. For example, the Send Spool Mail (SNDSPLMAIL) command accepts up to 300 email addresses on the recipient parameter. When writing CL programs, the problem of how to code for a variable number of email addresses without coding the SNDSPLMAIL command multiple times (once for each address count) arises. The solution is a little known CL trick for coding "no value" in a variable. "No value" is represented in CL by '*N'. Consider the following program fragment:

```
PGM
DCL        VAR(&ADD1) TYPE(*CHAR) LEN(128) VALUE('*N')
DCL        VAR(&ADD2) TYPE(*CHAR) LEN(128) VALUE('*N')
DCL        VAR(&ADD3) TYPE(*CHAR) LEN(128) VALUE('*N')
        ...
CHGVAR     VAR(&ADD1) VALUE(NOBODY@GUMBO.COM)
        ...
SNDSPLMAIL FILE(QPDSPLIB) TRANSFORM(*TXT) +
             TOSMTPNAME((&ADD1) (&ADD2) (&ADD3))
        ...
ENDPGM
```

Since &ADD2 and &ADD3 contain '*N' they are treated as if they were not specified on the command and the email is sent to only one address.

Changing Command Defaults

As with any CL command, you can change the default values of the commands found in our products. You do this using the IBM i Change Command Default (CHGCMDDFT) command.

But before you do, there are some gotchas (slang term for "I got you": a trap) you should be aware of. You WILL lose the change each time a new release of the product is installed, and you COULD lose the change when PTFs are applied to the product. You must then reapply the default change.

As an example, to change the default transform on SpoolMail's SNDSPLMAIL command from *TXT to *PDFA4, run the following:

```
CHGCMDDFT  CMD(SNDSPLMAIL) NEWDFT('TRANSFORM(*PDFA4)')
```

GUMBO recommends AGAINST changing command defaults, we know from the calls for support we receive that this regularly causes problems for customers.

Chapter 6 Conversions

What's In This Chapter

This chapter describes the spooled file conversions available with SpoolMail. The chapter:

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

Overview

The Send Spool Mail (SNDSPLMAIL) command retrieves the requested spooled file from IBM i's spool store and converts it for email delivery. IBM i applications can produce spooled files in the following data streams:

- *SCS (SNA Character String)
- *IPDS (Intelligent Printer Data Stream)
- *AFPDS (Advanced Function Presentation Data Stream)
- *USERASCII (ASCII data stream)
- *LINE (1403 line data)
- *AFPDSLINE (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.

The Send Spool Mail (SNDSPLMAIL) command converts the spooled file in one of two ways based on the SEND parameter. With SEND(*ATTACH), which is the default, the spooled file's contents are converted into a stream file that is sent as an attachment to an email message. With SEND(*TEXTPLAIN) the spooled files contents are copied directly into the body of an email message.

SpoolMail can produce attached stream files in several different formats:

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

- IBM's Final Form Text (FFT)
- 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:

Figure: Print Data Stream/Conversion Matrix

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
*AFPDSLINE	note	note			note	YES	note		note
Notes: o Print Data Stream is found on WRKSPLFA's "Printer device type" parameter. Use option 8 from WRKOUTQ or WRKSPLF. o PDF is double byte enabled for Chinese/Japanese/Korean. o TXT is double byte enabled for *SCS. o Convert *LINE and *AFPDSLINE to *AFPDS using OVRPRTF CVTLINDTA(*YES) or respool using CRTAFPDTA/PRTAFPDTA.									

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

The following sections describe the conversions in more detail.

ASCII Text

ASCII text stream 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 place 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 an AFPDS spooled file 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 ASCII text stream files is **txt**.

Adobe Portable Document Format

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 by SpoolMail 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**.

On October 1, 2005, International Organization for Standardization (ISO) published *ISO 19005-1 Document Management - Electronic document file format for long term preservation - Part 1: Use of PDF 1.4 (PDF/A-1)* This standard defines a format (PDF/A) for the long-term archiving of electronic documents and is based on the PDF Reference Version 1.4 (implemented in Adobe Acrobat 5). The files generated by SpoolMail optionally conform to this standard.

Font Processing

When converting spooled files SpoolMail 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 if all of the characters can be represented. The built in fonts are:

- Courier (including bold, italic and bold italic)
- Helvetica (including bold, italic and bold italic)
- Times (including bold, italic and bold italic)
- 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 PDFFNTIMB(*ALL) on the PDF font imbedding parameter. Imbedding fonts includes a copy of the font's definition in the generated stream file.

For printer resident fonts, that is fonts specified using font global IDs such as **11**, you can convert to and imbed IBM i's host resident printer emulation fonts (at the expense of file size) by specifying PDFFNTIMB(*ALL) on the PDF font imbedding parameter. Imbedding fonts includes a copy of the font's definition in the generated stream file.

Text positioning

Most IBM i 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.

File Signing

The PDF documents produced can be, optionally, digitally signed. The signature included in the PDF document allows the identity of the author to be validated and provides additional assurance that the PDF document has not been tampered with after it was signed.

Document Open Options

PDF documents can be configured to control the behavior of Acrobat when the document is opened or printed. The configuration settings are those found in Acrobat under File > Properties. 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 SpoolMail 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 PDF 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.

The transforms to generate PDF/A are:

*PDFALETTER	for 8.5" x 11" paper size
*PDFALEGAL	for 8.5" x 14" paper size

*PDFASTATEMENT	for 5.5" x 8.5" paper size
*PDFAEXECUTIVE	for 7.25" x 10.5" paper size
*PDFALEDGER	for 11" x 17" paper size
*PDFAA5	for A5 paper size
*PDFAA4	for A4 paper size
*PDFAA3	for A3 paper size
*PDFAB5	for B5 paper size
*PDFAB4	for B4 paper size
*PDFALTRLGL	for 8.5" x 11" paper size in drawer 1 and 8.5" x 14" paper size in drawer 2.
*PDFALGLLTR	for 8.5" x 14" paper size in drawer 1 and 8.5" x 11" paper size in drawer 2.

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**.

Miscellaneous

The recommended extension for Portable Document Format stream files is **pdf**.

Microsoft Rich Text Format

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:

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

The recommended extension for Rich Text Format stream files is **rtf**.

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. An HTML file contains HTML tags and the content of the spooled file. The generated file can be view by any web browser, making this transform useful when the users have differing platforms.

Transform Specification

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

*HTMLBASIC	A very simple, fixed, conversion
*HTMLCSS	An XHTML 1.0 based conversion which allows styling

*HTMLBASIC

SpoolMail generates a HTML file that specifies a fixed pitch font. The font size is determined by SpoolMail'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 recommended target CCSID is *UTF8.

*HTMLCSS

This conversion is an update of *HTMLBASIC that reflects changes to the standards over the years and allows you to control appearance through a style sheet.

SpoolMail generates a HTML file by converting print data in the spooled file from EBCDIC to UTF8 based on the value specified in the source CCSID parameter. Target CCSID is ignored. Each page is placed in a row of a single column table, and only the print data is converted. Images, overlays, page segments, etc. are not converted. The conversion is DBCS enabled.

The contents of the file specified on the Style sheet (HTMCSS) parameter are copied, unaltered and uninspected, into the generated html. The contents are placed within a <style></style> tag pair. If no style sheet is specified, a basic style sheet is generated.

Miscellaneous

The recommended extension for Hyper Text Markup Language stream files is **html** or **htm**.

Tag Image File Format

Tag Image File Format is a widely used format for storing image data.

SpoolMail generates a TIFF file by passing the contents of the spooled file to the IBM i Host Print Transform Function and storing the converted data stream in a stream file which is sent as an attachment.

The generated file can be view by most image viewing or editing applications. Our experience is that the IBM i support is some what flakey, and that some 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:

*TIFFLETTER	Group 4 specification conversion with letter size paper implied.
*TIFFLEGAL	Group 4 specification conversion with legal size paper implied.
*TIFFEXECUTIVE	Group 4 specification conversion with executive size paper implied.
*TIFFLEDGER	Group 4 specification conversion with ledger size paper implied.
*TIFFA3	Group 4 specification conversion with A3 size paper implied.
*TIFFA4	Group 4 specification conversion with A4 size paper implied.

*TIFFA5	Group 4 specification conversion with A5 size paper implied.
*TIFFB4	Group 4 specification conversion with B4 size paper implied.
*TIFFB5	Group 4 specification conversion with B5 size paper implied.
*TIFFCONT80	Group 4 specification conversion with continuous 8.0 inch paper implied.
*TIFFCONT132	Group 4 specification conversion with continuous 13.2 inch paper implied.
*TIFF	Group 4 specification
*TIFFPB	Pack Bit specification

The recommended extension for Tag Image File Format stream files is tif.

IBM i Host Print Transform

IBM i's Host Print Transform converts *AFPDS or *SCS print data streams and generates an ASCII print data stream for a number of IBM and non-IBM printer. For example, you can print Advanced Function Presentation (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 IBM i system objects that describe characteristics of a particular ASCII printer.

SpoolMail 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 stream file which is sent as an attachment. The transform performed is controlled by the TRANSFORM() and WSCST() parameters of the Send Spool Mail (SNDSPLMAIL) command. The values specified in the Send Spool Mail (SNDSPLMAIL) command's Target coded character set id (CCSID), and Source coded character set id (SRCCCSID) parameters are ignored.

The generated file can be copied by the recipient directly to a printer port for printing. For example, if the attached 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 stream 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

SpoolMail can copy a spooled file's print data stream directly to a stream file without conversion. The data in the spooled file is not converted, and the Send Spool Mail (SNDSPLMAIL) command's Target coded character set id (CCSID), and Source coded character set id (SRCCCSID) parameters are ignored. This is most useful for delivering spooled files with a *USERASCII print data stream but works with any spooled file.

The generated file can be copied by the recipient directly to a printer port for printing. For example, if the attached 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 stream files is spl, unless a more accurate extension is available for the contents of the file.

Adobe PostScript

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

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

The API does not process the following objects:

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

SpoolMail generates a PostScript file by passing the contents of the spooled file to the IBM i API and storing the converted data stream in a stream file. The generated file has the CCSID specified in the Send Spool Mail (SNDSPLMAIL) command's Target coded character set id (CCSID) parameter. The Source coded character set id (SRCCCSID) parameter is ignored.

The generated file can be copied directly to a PC printer port for printing. For example, if the stream 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 stream files is ps.

IBM's Final Form Text

Final-Form Text is an extension of SCS. It is used within the OfficeVision Office environment and defines how the data streams that represent a document to be printed are organized. Each line of the input spooled file is formatted as Final Form Text based on the value specified in the Send Spool Mail (SNDSPLMAIL) command's Source coded character set id (SRCCCSID) parameter. The value specified Target coded character set id (CCSID) parameter is ignored.

The generated file can be read by any FFT capable viewer. Typically this is OfficeVision.

You specify this conversion by specifying TRANSFORM(*FFTBASIC).

The recommended extension for Final Form Text stream files is fft.

AFP Print File

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 formatted print files.

SpoolMail 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 Send Spool Mail (SNDSPLMAIL) command's Target coded character set id (CCSID), parameter is ignored. The resulting stream 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 7 Commands

What's In This Chapter

This chapter describes the control language (CL) commands supplied by SpoolMail. The commands are arranged in alphabetic order by command name (mnemonic). Each description includes environment and threadsafe classification, a brief general description, detailed parameter explanations, examples and message information. Additional explanatory material can be found in the *Programming > Control Language > CL Concepts > CL Commands > CL command information and documentation* topic in the IBM i Information Center at http://publib.boulder.ibm.com/eserver/ibmi.html.

Archive Spooled File (ARCSPLF)

Where allowed to run: All environments (*ALL)
Threadsafe: No

The Archive Spooled File (ARCSPLF) command creates a spooled file archive which can be saved and restored, and from which the spooled file can be retrieved (recreated).

Parameters

Keyword	Description	Choices	Notes
FILE	Spooled file	*Name*	Required, Positional 1
ARC	Spooled file archive	*Qualified object name*	Optional
	Qualifier 1: Spooled file archive	*Name*, ***GEN**	
	Qualifier 2: Library	*Name*, ***CURLIB**	
JOB	Job name	Single values: ***** Other values: *Qualified job name*	Optional
	Qualifier 1: Job name	*Name*	
	Qualifier 2: User	*Name*	
	Qualifier 3: Number	000000-999999	
SPLNBR	Spool file number	1-999999, *ONLY, ***LAST**, *ANY	Optional
JOBSYSNAME	Job system name	*Name*, ***ONLY**, *CURRENT, *ANY	Optional
CRTDATE	Spooled file created	Single values: ***ONLY**, *LAST Other values: *Element list*	Optional
	Element 1: Creation date	*Date*	
	Element 2: Creation time	*Time*, ***ONLY**, *LAST	

Spooled file (FILE)

Specifies the name of the spooled file to process. CHAR(10)

This is a required parameter.

name Specify the name of the spooled file.

Spooled file archive (ARC)

Specifies the name of the archive that contains the spooled file.

Qualifier 1: Spooled file archive

*GEN Generate the archive name from the supplied FILE, JOB, and SPLNBR parameters.
name Specify the name of the archive.

Qualifier 2: Library

*CURLIB Use the current library for the job. If no library is specified as the current library for the job, QGPL is used.
name Specify the name of the library.

Job name (JOB)

Specifies the job that contains the spooled file.

Single values

* The job that issued the command.

Qualifier 1: Job name

name Specify the name of the job. CHAR(10)

Qualifier 2: User

name   Specify the name that identifies the user profile under which the job is run. CHAR(10)

Qualifier 3: Number

000000-999999   Specify the system assigned job number. CHAR(6)

Spool file number (SPLNBR)

Specifies the number of the spooled file. INT(4)

<u>*LAST</u>   The highest numbered spooled file with the specified file name is used.

*ONLY   Only one spooled file in the job has the specified file name; therefore, the number of the spooled file is not necessary.

*ANY   The spooled file number is not used to determine which spooled file is used. Use this value when the job system name parameter or the spooled file create date and time parameter is to take precedence over the spooled file number when selecting a spooled file.

1-999999   Specify the number of the spooled file.

Job system name (JOBSYSNAME)

Specifies the system where the job that created the spooled file (JOB parameter) ran. This parameter is considered after the job name, user name, job number, spooled file name, and spooled file number parameter requirements have been met.

<u>*ONLY</u>   There is one spooled file with the specified job name, user name, job number, spooled file name, spooled file number, and spooled file create date and time.

*CURRENT   The spooled file created on the current system with the specified job name, user name, job number, spooled file name, spooled file number, and create date and time is used.

*ANY   The job system name is not used to determine which spooled file is used. Use this value when the spooled file create date and time parameter is to take precedence over the job system name when selecting a spooled file.

name   Specify the name of the system where the job that created the spooled file ran.

Spooled file created (CRTDATE)

Specifies the date and time the spooled file was created. This parameter is considered after the job name, user name, job number, spooled file name, spooled file number, and job system name parameter requirements have been met.

Single values

<u>*ONLY</u>   There is one spooled file with the specified job name, user name, job number, spooled file name, spooled file number, and job system name.

*LAST   The spooled file with the latest create date and time of the specified job name, user name, job number, spooled file name, spooled file number, and job system name is used.

Element 1: Creation date

date   Specify the date the spooled file was created.

Element 2: Creation time

<u>*ONLY</u>   There is one spooled file with the specified job name, user name, job number, spooled file name, spooled file number, job system name, and spooled file create date.

*LAST   The spooled file with the latest create time of the specified job name, user name, job number, spooled file name, spooled file number, job system name, and spooled file create date is used.

time   Specify the time the spooled file was created.

Examples

Example 1:

```
ARCSPLF  FILE(QSYSPRT)
```

This command archives the last spooled file named QSYSPRT. The current job is searched to locate the file. The archive is placed in the job's *CURLIB.

Example 2:

```
ARCSPLF  FILE(QPQUPRFIL) ARC(QGPL/*GEN) SPLNBR(3)
```

The file named QPQUPRFIL, which is spooled file number 3 in the job executing this command, is archived. The archive is placed in library QGPL.

Error messages

*ESCAPE messages

SPLA106   Unable to archive spooled file for job //.

Change Device Gumbo Printer (CHGDEVGLP)

Where allowed to run: All environments (*ALL)
Threadsafe: No

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

Parameters

Keyword	Description	Choices	Notes
DEVD	Device description	*Name*	Required, Positional 1
START	Start printer writer now	***YES**, *NO	Optional

Device description (DEVD)

Specifies the name of the device description.

This is a required parameter.

> **name** Specify the name of the device.

Start printer writer now (START)

Specifies whether a printer writer is automatically started (restarted if it is active) when the changes are complete.

Note: The changes do not take affect until the printer writer is restarted.

> **<u>*YES</u>** A printer writer is started immediately.
> ***NO** A printer writer is not started now.

Examples

Example 1:

```
CHGDEVGLP  DEVD(GPL01)
```

This command changes a Gumbo logical printer with named GLP01.

Change SpoolMail Authorization (CHGSM1AUT)

Where allowed to run: All environments (*ALL)
Threadsafe: No

The Change SpoolMail Authorization (CHGSM1AUT) command changes the authorization code for SpoolMail. The command is used to extend a demonstration period or to permanently authorize SpoolMail for a system or a partition.

The proposed authorization information is tested against the authorization algorithm to confirm that it will authorize SpoolMail. If the test fails, no change is made.

Parameters

Keyword	Description	Choices	Notes
AUTH	Authorization code	*Hexadecimal value*	Required, Positional 1
EXPDAT	Expiration date (CCYYMMDD)	*Character value*, ***NONE**	Optional, Positional 2
LICTYP	License type	***SYS**, *LPAR	Optional, Positional 3
PRCMAX	Processor maximum capacity	*Decimal number*	Optional, Positional 4

Authorization code (AUTH)

Specifies the authorization code to use. The authorization code is 8 hex digits that may be entered in upper or lower case.

This is a required parameter.

hexadecimal-value   Specify the case insensitive authorization code.

Expiration date (CCYYMMDD) (EXPDAT)

Specifies the date on which the authorization expires.

*NONE   The authorization is permanent.
date   The date on which the authorization expires in CCYYMMDD format.

License type (LICTYP)

Specifies the type of license that is authorized.

*SYS   The authorization is for a system wide license, which enables any and all partitions on the system but is specific to the processor group.

                    Note: The authorization code must be entered in each partition.

*LPAR   The license is specific to one of the partitions on the system and specific to a number of processors within the partition. A partition license must be entered in the partition for which it is intended.

Processor maximum capacity (PRCMAX)

Specifies the maximum processor capacity for which the partition is licensed. The value is expressed in terms of processors where 1.00 is 100% of a processor's capacity or the same as 1 processor, .50 is 50% of a processor's capacity or .5 processors, 2.00 is 200% of a processor's capacity or 2 processors, etc.

decimal-number   Specify the maximum processor capacity.

Examples

Example 1:

```
CHGSM1AUT  AUTH(01234567)
```

This command changes the authorization code to a permanent system wide license code.

Example 2:

```
CHGSM1AUT  AUTH(01234567) LICTYP(*LPAR) PRCMAX(1.3)
```

This command changes the authorization code to a permanent partition only license code for 1.3 processors in the current partition.

Error messages

*ESCAPE messages

AUT9909   SpoolMail authorization change was not performed.

Change SpoolMail Default (CHGSM1DFT)

Where allowed to run: All environments (*ALL)
Threadsafe: No

The Change SpoolMail Default (CHGSM1DFT) command changes values used by SpoolMail to control processing and other activities.

Parameters

Keyword	Description	Choices	Notes
MARGIN	Margins in hundredths	*Element list*	Optional, Positional 1
	Element 1: Left	0-255, ***SAME**	
	Element 2: Right	0-255, ***SAME**	
	Element 3: Top	0-255, ***SAME**	
	Element 4: Bottom	0-255, ***SAME**	
PDFDEFLATE	Compress PDF files	*NO, *YES, ***SAME**, X'00', N, S	Optional, Positional 2
HTMFNTSIZ	*HTMLBASIC Font Size	*MINUS3, *MINUS2, *MINUS1, *PLUS0, *PLUS1, *PLUS2, *PLUS3, ***SAME**, ' ', *, A, B, C, D, E, F	Optional, Positional 3
REFPRTDEV	Reference printer device	*Name*, ***SAME**, *SYSVAL, *AFPYES, *HPTASCII, *HPTOLD, *HPT, *NONE	Optional, Positional 4
REFOFFSET	Refprtdev offset default	*Element list*	Optional, Positional 5
	Element 1: Left	*Integer*, ***SAME**	
	Element 2: Top	*Integer*, ***SAME**	
REFCORRECT	Refprtdev offset correction	*Element list*	Optional, Positional 6
	Element 1: Left	*Integer*, ***SAME**	
	Element 2: Top	*Integer*, ***SAME**	
PDFNPBOVL	PDF apply noprtbdr to overlay	*NO, *YES, ***SAME**, ' ', Y, S	Optional, Positional 7
PDFFNTIMB	PDF font imbedding	Single values: ***SAME**, *NONE, *AUTO, *ALL, *TYPES13 Other values (up to 5 repetitions): *TYPE3, *TYPE1, *FGID, *TRUETYPE, 0, 1, 2, 3, 4, 8, 16, 32, -1	Optional, Positional 8
TXTRELPOS	Text relative positioning	*ESTIMATE, *EXACT, *EXACTMOD, ***SAME**, 0, 1, 3, 226	Optional, Positional 9
ORIGINATOR	Originator user ID	Single values: ***SAME**, *CURRENT Other values: *Element list*	Optional, Positional 10
	Element 1: User ID	*Character value*	
	Element 2: Address	*Character value*	
PDFIMGPBL	PDF image process blending	Single values: ***SAME**, *RECOMMENDED Other values (up to 3 repetitions): *NOPREBLEND32, *PREBLEND32, *NOPREBLEND4, *PREBLEND4, *BLENDOVL, *NOBLENDOVL, 0, 1, 2, 64	Optional, Positional 11
SIXSIC	Spool Index SCS Control	*ORDINAL, *RELATIVE, ***SAME**, 0, 64, -1	Optional, Positional 12
SGNKEY	Signing key	Single values: ***SAME**, *NONE Other values: *Element list*	Optional, Positional 13
	Element 1: Application ID	*Character value*	
PDFSGNKEY	PDF document signing key	Single values: ***SAME**, *NONE Other values: *Element list*	Optional, Positional 14
	Element 1: Application ID	*Character value*	
GROPRCDFT	Graphic processor default	*PRECISION1, *PRECISION2, ***SAME**, SAME, PRC1, PRC2	Optional, Positional 15
GATEWAY	Obsolete	Single values: ***SAME**, *NONE Other values: *Element list*	Optional, Positional 17
	Element 1: User ID	*Character value*	
	Element 2: Address	*Character value*	

NOPRTBDR	Obsolete	Element list	Optional,
	Element 1: .	*Integer*, **<u>*SAME</u>**	Positional 16
	Element 2: .	*Integer*, **<u>*SAME</u>**	

Margins in hundredths (MARGIN)

Margins are used when converting a spooled file. The values for margins are entered in hundredths. For example, 100 means one inch and 25 means 1/4 inch.

Note: Not all transforms require or use the margin setting. Currently the *RTF transforms do use the margin setting.

Note: In previous releases, margins were used to affect the conversion of *SCS and *IPDS to PDF. This function is now supplied by the "Refprtdev offset default" (REFOFFSET) and "Reference printer device" (REFPRTDEV) parameters.

<u>*SAME</u>	The value is not changed.
margin	Specify the margin in hundredths.

Compress PDF files (PDFDEFLATE)

Specifies whether or not to use compression when using any of *PDF conversions. When compression is used, the file is smaller but must be viewed with Adobe's Acrobat Reader 3.0 or higher. When compression is not used, older versions of Adobe's Acrobat Reader can be used to view the file.

<u>*SAME</u>	The value is not changed.
***YES**	Compression is performed.
***NO**	Compression is not performed.

*HTMLBASIC Font Size (HTMFNTSIZ)

Specifies the font size specification used by the *HTMLBASIC transform. This value is used on the "<FONT SIZE=..." tag in the generated HTML.

<u>*SAME</u>	The value is not changed.
***MINUS3**	Font is three increments smaller than the base font.
***MINUS2**	Font is two increments smaller than the base font.
***MINUS1**	Font is one increment smaller than the base font.
***PLUS0**	Font is the size as the base font.
***PLUS1**	Font is one increment larger than the base font.
***PLUS2**	Font is two increments larger than the base font.
***PLUS3**	Font is three increments larger than the base font.

Reference printer device (REFPRTDEV)

The reference printer device is used when processing a spooled file. If an attribute of a spooled file specifies *DEVD, the reference printer device's description is retrieved to determine the value that is substituted for *DEVD. The reference printer device, in conjunction with the Refprtdev offset default and Refprtdev offset correction values, is also used to determine the correct positioning during processing.

<u>*SAME</u>	The value is not changed.
***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.
***HPTOLD**	Included for backward compatibility, use *HPTASCII.
***HPT**	Included for backward compatibility, same as *HPTOLD.
***NONE**	Included for backward compatibility, same as *AFPYES.

name   Specify the name of the reference printer device.

Refprtdev offset default (REFOFFSET)

Specifies the default offset values (in 1/1440ths of an inch) 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:

- For HPT printers, this offset is often referred to as a "no print border".
- For *IPDS printers, this offset is often referred to as an "unprintable area".
- When set to 0s, a printer that is capable of printing edge-to-edge and with the capability turned on, is implied.
- Under most circumstances, the offset values move text and other page elements without moving page overlays.
- 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.
- 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 Redbook *Printing V SG24-4389* (and its replacement *Printing VI SG24-6250*) available at http://publib.boulder.ibm.com/eserver/ibmi.html.

Note: Previously, some of the function provided by the REFPRTDEV and REFOFFSET parameters was provided by the MARGIN and NOPRTBDR parameters. See the help text for them for further details.

<u>*SAME</u>   The value is not changed.
integer   Specify the offset in 1/1440ths of an inch.

Refprtdev offset correction (REFCORRECT)

Specifies offset correction values (in 1/1440ths of an inch), 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 device's 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.

<u>*SAME</u>   The value is not changed.
integer   Specify the offset correction 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 (PDFFNTIMB)

Specifies the default setting for font imbedding. Font imbedding specifies how fonts referenced by the spooled file are represented in the generated PDF file. Imbedding fonts improves the fidelity of the PDF at the expense of file size.

Single values

*SAME	The value is not changed.
*NONE	No fonts are included in the file. All fonts are mapped to Acrobat built-ins (Courier, Times New Roman, Helvetica).
*AUTO	Fonts are included when the Adobe built-in encoding does not contain all characters used by the spooled file. Imbedding is determined on a per font basis similar to *ALL.
*ALL	All Fonts are included in the file. Unused characters are removed from the font before inclusion.
	Note: The current implementation does not remove unused characters from type 1 fonts.
*TYPES13	Both raster and outline fonts are included in the file.

Other values (up to 5 repetitions)

*TYPE1	Outline fonts are included in the file.
*TYPE3	Raster fonts are subsetted and included in the file.
*FGID	Printer resident font specifications are converted to host resident printer emulation fonts and these are included in the file.
*TRUETYPE	TrueType and OpenType fonts are included in the file.

Text relative positioning (TXTRELPOS)

Specifies the accuracy with which relative text positioning operations are processed. Most IBM i 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.

*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.
	Note: This is the same as *EXACT but uses a modified positioning algorithm employed by some printers.

Originator user ID (ORIGINATOR)

The Originator User ID is the value used when *DEFAULT is specified on Originator (USRID) parameter.

*SAME	The value is not changed.
*CURRENT	The user id of the user profile running the command is used.
originator-user-id	Specify the network id used as the *DEFAULT value.

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 IBM i 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: *BLENDOVL and *NOBLENDOVL are obsolete and have no effect.

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.

Signing key (SGNKEY)

Specifies the default digital certificate used to sign email.

The signature included with the email allows the recipient to validate the identity of the sender and provides additional assurance that the email has not been tampered with after it is signed.

A certificate is referenced by specifying the name (Application ID) of an **object signing** application created using IBM i's Digital Certificate Manager.

*SAME	The value is not changed.
*NONE	No signing operation is performed.
application-id	Specify the application identifier to use in the signing operation.

PDF document signing key (PDFSGNKEY)

Specifies the digital certificate used to sign Portable Document Format (PDF) files.

The PDF documents produced can be, optionally, digitally signed. The signature included in the PDF document allows the identity of the author to be validated and provides additional assurance that the PDF document has not been tampered with after it was signed.

A certificate is referenced by specifying the name (Application ID) of an **object signing** application created using IBM i's Digital Certificate Manager.

*SAME	The value is not changed.
*NONE	No signing operation is performed.
application-id	Specify the application identifier to use in the signing operation.

Graphic processor default (GROPRCDFT)

Specifies the default settings for the G:OCA processing engine. Most printers implement Precision 1 as the device drawing default and this is the recommended value. Most graphic objects specify the precision needed to correctly render them, and don't depend on a printer's drawing default. In the case where your graphic object does not specify a precision you can match the default supplied by your printer.

*SAME	The value is not changed.
*PRECISION1	Graphic engine device drawing default is 1=String precision.
*PRECISION2	Graphic engine device drawing default is 2=Character precision.

Internet Gateway ID (GATEWAY)

Note: This is an obsolete parameter that is no longer required to correctly process email. It is included to allow configuration of an SNADS SMTP route if desired. Unless you know you need this, you do not need this.

An Internet Gateway id is a specially configured network user id in the system distribution directory that switches SNADS distributions to SMTP.

*SAME	The value is not changed.
*NONE	The context switching internet gateway is disabled.
internet-gateway-id	Specify the network id used as a context switching internet gateway.

PDF border correction 1440ths (NOPRTBDR)

This is an obsolete parameter whose value is no longer used and is ignored. Use REFOFFSET() instead.

Examples

Example 1:
```
CHGSM1DFT   REFPRTDEV(PRT02)
```

This command changes the reference printer device to PRT02. The printer specific behavior is used as a reference in processing.

Example 2:
```
CHGSM1DFT   REFPRTDEV(*HPTASCII)
```

This command changes the reference printer device to PRT02. Processing emulates a Host Print Transform attached *ASCII printer.

Check SpoolMail Authorization (CHKSM1AUT)

Where allowed to run: All environments (*ALL)
Threadsafe: No

The Check SpoolMail Authorization (CHKSM1AUT) command executes SpoolMail's authorization verification function. This allows you to determine whether and how the product is authorized for use.

Parameters

Keyword	Description	Choices	Notes
MSGQ	Message queue	Single values: *NONE Other values: *Qualified object name*	Optional, Positional 1
	Qualifier 1: Message queue	*Name*	
	Qualifier 2: Library	*Name*, ***LIBL**, *CURLIB	

Message queue (MSGQ)

Specifies a message queue that should receive messages if the product is not permanently authorized.

Single values

*NONE   Messages are not sent to an external message queue.

Qualifier 1: Message queue

name   Specify the name message queue that receives messages.

Qualifier 2: Library

*LIBL   All libraries in the thread'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.
name   Specify the name of the library.

Examples

Example 1:

```
CHKSM1AUT
```

This command executes SpoolMail's authorization verification function to determine whether and how the product is authorized for use.

Example 2:

```
CHKSM1AUT  MSGQ(QSYSOPR)
```

This command executes SpoolMail's authorization verification function to determine whether and how the product is authorized for use. If the product is not permanently authorized for use, a failure message is sent to the system operator's message queue.

Error messages

*ESCAPE messages

AUT9901   We're sorry, the SpoolMail demonstration period is over.
AUT9905   Unable to access machine information.
AUT9907   SpoolMail processor group change grace period has expired.
AUT9916   SpoolMail release upgrade grace period has expired.
AUT9918   We're sorry, more than 30 days have elapsed since the SpoolMail was first installed.
AUT9921   SpoolMail unpartitioned system grace period has expired.
AUT9926   SpoolMail processor limit exceeded grace period has expired.
AUT9930   SpoolMail authorization check failed.

Create Device Gumbo Printer (CRTDEVGLP)

Where allowed to run: All environments (*ALL)
Threadsafe: No

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 IBM i's writer commands (WRKWTR, STRPRTWTR, ENDWTR, HLDWTR, etc.) and IBM i'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.

Parameters

Keyword	Description	Choices	Notes
DEVD	Device description	*Name*	Required, Positional 1
PORT	Port number	0-65535	Required, Positional 2
ONLINE	Online at IPL	***YES**, *NO	Optional
PRTERRMSG	Printer error message	***INQ**, *INFO	Optional
MSGQ	Message queue	*Qualified object name*	Optional
	Qualifier 1: Message queue	*Name*, **QSYSOPR**	
	Qualifier 2: Library	*Name*, ***LIBL**, *CURLIB	
START	Start printer writer now	***YES**, *NO	Optional
TEXT	Text 'description'	*Character value*, ***BLANK**	Optional
AUT	Authority	*Name*, ***LIBCRTAUT**, *CHANGE, *ALL, *USE, *EXCLUDE	Optional

Device description (DEVD)

Specifies the name of the device description.

This is a required parameter.

    name   Specify the name of the device.

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. You should also avoid "well known" and "registered" ports such as 25 and 9100. Otherwise, it does not matter what port number you specify.

This is a required parameter.

    0-65535   Specify the port number to use.

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 (PRTERRMSG)

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.

Qualifier 1: Message queue

QSYSOPR	Messages are sent to the QSYSOPR message queue.
name	Specify the name of the message queue.

Qualifier 2: Library

*LIBL	All libraries in the thread'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.
name	Specify the name of the library.

Start printer writer now (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.

Text 'description' (TEXT)

Specifies text that provides a brief description.

*BLANK	No text is specified.
character-value	Specify up to 50 characters of text enclosed in apostrophes.

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 affect 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 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.
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

Example 1:

```
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)

Where allowed to run: All environments (*ALL)
Threadsafe: No

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 emailing with a problem report.

Parameters

Keyword	Description	Choices	Notes
FILE	Spooled file	*Name*	Required, Positional 1
SAVF	Save file	*Qualified object name*	Required, Positional 2
	Qualifier 1: Save file	*Name*	
	Qualifier 2: Library	*Name*, ***CURLIB**	
JOB	Job name	Single values: *****	Optional
		Other values: *Qualified job name*	
	Qualifier 1: Job name	*Name*	
	Qualifier 2: User	*Name*	
	Qualifier 3: Number	000000-999999	
SPLNBR	Spool file number	1-999999, *ONLY, ***LAST**, *ANY	Optional
SAVRSC	Save resources	***YES**, *NO, Y, N	Optional
MSG	Message	*Character value*, ***NONE**	Optional

Spooled file (FILE)

Specifies the name of the spooled file to process. CHAR(10)

This is a required parameter.

name Specify the name of the spooled file.

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.

This is a required parameter.

Qualifier 1: Save file

name Specify the save file name.

Qualifier 2: Library

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

name Specify the name of the library.

Job name (JOB)

Specifies the job that contains the spooled file.

Single values

* The job that issued the command.

Qualifier 1: Job name

name Specify the name of the job. CHAR(10)

Qualifier 2: User

name   Specify the name that identifies the user profile under which the job is run. CHAR(10)

Qualifier 3: Number

000000-999999   Specify the system assigned job number. CHAR(6)

Spool file number (SPLNBR)

Specifies the number of the spooled file. INT(4)

*LAST	The highest numbered spooled file with the specified file name is used.
*ONLY	Only one spooled file in the job has the specified file name; therefore, the number of the spooled file is not necessary.
*ANY	The spooled file number is not used to determine which spooled file is used. Use this value when the job system name parameter or the spooled file create date and time parameter is to take precedence over the spooled file number when selecting a spooled file.
1-999999	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.
character-value	Specify a short message to include in the save file.

Examples

Example 1:

```
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.

Example 2:

```
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.

Error messages

*ESCAPE messages

SPLE101	Unable to create spool save file for job //.

Delete Device Gumbo Printer (DLTDEVGLP)

Where allowed to run: All environments (*ALL)
Threadsafe: No

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

Note: If a writer is active it is ended. If the device is varied on, it is varied off.

Parameters

Keyword	Description	Choices	Notes
DEVD	Device description	*Name*	Required, Positional 1

Device description (DEVD)

Specifies the name of the device description.

This is a required parameter.

> **name**   Specify the name of the device.

Examples

Example 1:

```
DLTDEVGLP  DEVD(GPL01)
```

This command deletes a Gumbo logical printer with named GLP01.

Dump Page Index Positions (DMPPIP)

Where allowed to run: All environments (*ALL)
Threadsafe: No

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.

Parameters

Keyword	Description	Choices	Notes
FILE	Spooled file	*Name*, *LASTCRT	Required, Positional 1
JOB	Job name	Single values: ***** Other values: *Qualified job name*	Optional, Positional 2
	Qualifier 1: Job name	*Name*	
	Qualifier 2: User	*Name*	
	Qualifier 3: Number	000000-999999	
SPLNBR	Spool file number	1-999999, *ONLY, ***LAST**	Optional, Positional 3
PAGERANGE	Page range to print	*Element list*	Optional, Positional 4
	Element 1: Starting page	*Integer*, **1**, *ENDPAGE	
	Element 2: Ending page	*Integer*, ***END**	

Spooled file (FILE)

Specifies the name of the spooled file to process. CHAR(10)

This is a required parameter.

*LASTCRT	The last spooled file created by the current job or thread is identified using the QSPRILSP API and processed. This is useful for jobs that create spooled files under other user profiles, which consequently end up in the user's QPRTJOB. When *LASTCRT is specified, the JOB() and SPLNBR() parameters are ignored.
name	Specify the name of the spooled file.

Job name (JOB)

Specifies the job that contains the spooled file.

Single values

*	The job that issued the command.

Qualifier 1: Job name

name	Specify the name of the job. CHAR(10)

Qualifier 2: User

name	Specify the name that identifies the user profile under which the job is run. CHAR(10)

Qualifier 3: Number

000000-999999	Specify the system assigned job number. CHAR(6)

Spool file number (SPLNBR)

Specifies the number of the spooled file. INT(4)

*LAST	The highest numbered spooled file with the specified file name is used.
*ONLY	Only one spooled file in the job has the specified file name; therefore, the number of the spooled file is

	not necessary.
*ANY	The spooled file number is not used to determine which spooled file is used. Use this value when the job system name parameter or the spooled file create date and time parameter is to take precedence over the spooled file number when selecting a spooled file.
1-999999	Specify the number of the spooled file.

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.
integer	Specify the starting page.

Element 2: Ending page

*END	Processing continues until the end of file.
integer	Specify the ending page.

Examples

Example 1:

```
DMPPIP      FILE(QSYSPRT)
               JOB(033194/QPGMR/MONTHEND) SPLNBR(2)
```

This command dumps data position information for spooled file number 2, QSYSPRT, from job 033194/QPGMR/MONTHEND.

Example 2:

```
DMPPIP      FILE(QSYSPRT) PAGERANGE(3 4)
```

This command dumps data position information for the last spooled file with name QSYSPRT from the job running the command. Only the data for pages 3 and 4 is dumped.

Error messages

*ESCAPE messages

SIX0001	Unable to dump page index positions for file .

Display Mail Log (DSPMAILLOG)

Where allowed to run: All environments (*ALL)
Threadsafe: No

The Display Mail Log (DSPMAILLOG) command shows the system mail log (IBM i journal QZMF). The mail log contains information about the processing of mail.

Note: Mail journaling must be turned on. To turn on mail journaling, specify JOURNAL(*YES) on the CHGSMTPA command. Only journal receivers in the current chain are searched.

Parameters

Keyword	Description	Choices	Notes
PERIOD	Time period	*Element list*	Optional, Positional 1
	Element 1: Starting date and time	*Element list*	
	Element 1: Starting time	*Time*, ***AVAIL**	
	Element 2: Starting date	*Date*, ***CURRENT**, **BEGIN*	
	Element 2: Ending date and time	*Element list*	
	Element 1: Ending time	*Time*, ***AVAIL**	
	Element 2: Ending date	*Date*, ***CURRENT**, **END*	
OUTPUT	Output	*****, **PRINT*	Optional, Positional 2

Time period (PERIOD)

Specifies the period of time for which the logged message data is shown. This parameter contains two lists of two elements each.

Element 1: Starting date and time

Element 1: Starting time   One of the following specifies the starting time from which entries are shown. Entries created before this time on the **Starting date** are not shown.

      *AVAIL   All data that is available for the specified date is shown.

      time   Specify the start time from which data for the specified date is shown. The time is specified in 24-hour format and can be specified with or without a time separator:

- Without a time separator, specify a string of 4 or 6 digits (hhmm or hhmmss) where hh = hours, mm = minutes, and ss = seconds.
- With a time separator, specify a string of 5 or 8 digits where the time separator specified for your job is used to separate the hours, minutes, and seconds. If you enter this command from the command line, the string must be enclosed in apostrophes. If a time separator other than the separator specified for your job is used, this command will fail.

Element 2: Starting date   One of the following specifies the starting date from which entries are shown. Entries created before this date are not shown.

      *CURRENT   The current date is used.

      *BEGIN   The data from the beginning of the log is shown.

      date   Specify the start date from which data is shown. The date must be specified in the job date format.

Element 2: Ending date and time

Element 1: Ending time   One of the following specifies the ending time to which entries are shown. Entries created after this time on the **Ending date** are not shown.

      *AVAIL   All data that is available for the specified date is shown.

      time   Specify the end time to which data for the specified date is shown. The time is

specified in 24-hour format and can be specified with or without a time separator:

- Without a time separator, specify a string of 4 or 6 digits (hhmm or hhmmss) where hh = hours, mm = minutes, and ss = seconds.
- With a time separator, specify a string of 5 or 8 digits where the time separator specified for your job is used to separate the hours, minutes, and seconds. If you enter this command from the command line, the string must be enclosed in apostrophes. If a time separator other than the separator specified for your job is used, this command will fail.

Element 2: Ending date   One of the following specifies the ending date to which entries are shown. Entries created after this date are not shown.

*CURRENT	The current date is used.
*END	The data to the end of the log is shown.
date	Specify the end date to which data is shown. The date must be specified in the job date format.

Output (OUTPUT)

Specifies where the output from the command is sent. CHAR(10)

*	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

Example 1:

DSPMAILLOG

The mail log entries for today are displayed on the screen.

Example 2:

```
DSPMAILLOG  PERIOD((*AVAIL *BEGIN) (*AVAIL *END))
            OUTPUT(*PRINT)
```

All available mail log entries in the current journal receiver chain are printed.

Error messages

*ESCAPE messages

MSU1074	Error encountered processing request.
MSU1076	No data for requested time range.
MSU5151	Mail journaling has not been turned on.

Display Page Data (DSPPAGDTA)

Where allowed to run: All environments (*ALL)
Threadsafe: No

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).

Parameters

Keyword	Description	Choices	Notes
FILE	Spooled file	*Name*, *LASTCRT	Required, Positional 1
PAGDTA	Page data	Values (up to 12 repetitions): *Element list*	Required, Positional 2
	Element 1: Line	1-255, *STRPAGGRP, *DOCIDXTAG, *DOCIDXPAG, *DOCIDXGRP, *STRPAGGRPP, *DOCIDXTAGP, *DOCIDXGRPP	
	Element 2: Position	1-378, 0	
	Element 3: Length	1-255, 0	
JOB	Job name	Single values: ***** Other values: *Qualified job name*	Optional, Positional 3
	Qualifier 1: Job name	*Name*	
	Qualifier 2: User	*Name*	
	Qualifier 3: Number	000000-999999	
SPLNBR	Spool file number	1-999999, *ONLY, ***LAST**	Optional, Positional 4
OUTPUT	Output	*****, *PRINT, *OUTFILE	Optional
OUTFILE	File to receive output	*Qualified object name*	Optional
	Qualifier 1: File to receive output	*Name*	
	Qualifier 2: Library	*Name*, ***LIBL**, *CURLIB	
OUTMBR	Output member options	*Element list*	Optional
	Element 1: Member to receive output	*Name*, ***FIRST**	
	Element 2: Replace or add records	***REPLACE**, *ADD	

Spooled file (FILE)

Specifies the name of the spooled file to process. CHAR(10)

This is a required parameter.

*LASTCRT	The last spooled file created by the current job or thread is identified using the QSPRILSP API and processed. This is useful for jobs that create spooled files under other user profiles, which consequently end up in the user's QPRTJOB. When *LASTCRT is specified, the JOB() and SPLNBR() parameters are ignored.
name	Specify the name of the spooled file.

Page data (PAGDTA)

Specifies the location (line, position and length), on the page of the spooled file, from which data is retrieved. INT(2), INT(2), INT(2) The most accurate method for determining the data location is to print a formatted dump of a sample spooled file using our Dump Page Index Positions (DMPPIP) command.

This is a required parameter.

Element 1: Line

*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.

1-255   Specify the line number where the data is located on the page.

Element 2: Position

1-378   Specify the position where the data is located in the line. Valid values range from 1 through 378. The value specified plus the data length should be less than the number of print positions in the spooled file.

Element 3: Length

1-255   Specify the length of the data. The value specified plus the start position should be less than the number of print positions in the spooled file.

Job name (JOB)

Specifies the job that contains the spooled file.

Single values

*	The job that issued the command.

Qualifier 1: Job name

name	Specify the name of the job. CHAR(10)

Qualifier 2: User

name	Specify the name that identifies the user profile under which the job is run. CHAR(10)

Qualifier 3: Number

000000-999999	Specify the system assigned job number. CHAR(6)

Spool file number (SPLNBR)

Specifies the number of the spooled file. INT(4)

*LAST	The highest numbered spooled file with the specified file name is used.
*ONLY	Only one spooled file in the job has the specified file name; therefore, the number of the spooled file is not necessary.
*ANY	The spooled file number is not used to determine which spooled file is used. Use this value when the job system name parameter or the spooled file create date and time parameter is to take precedence over the spooled file number when selecting a spooled file.
1-999999	Specify the number of the spooled file.

Output (OUTPUT)

Specifies where the output from the command is sent. CHAR(10)

*	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. CHAR(10) CHAR(10)

Qualifier 1: File to receive output

name	Specify the name of the file to which the output of the command is directed.

Qualifier 2: Library

*LIBL	All libraries in the thread'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.
name	Specify the name of the library.

Data is output in the PDPAGDRF record format which is documented in the appendix.

Output member options (OUTMBR)

Specifies the name of the database file member that receives the output of the command. CHAR(10) CHAR(10)

Element 1: Member to receive output

*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). If the member already exists, you have the option to add new records to the end of the existing member or clear the

	member and then add the new records.
name	Specify the name of the member that receives the output. If it does not exist, the system creates it.

Element 2: Replace or add records

<u>*REPLACE</u>	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.

Examples

Example 1:

```
DSPPAGDTA   FILE(QSYSPRT)
            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 well as the page group names added using the STRPAGGRP() DDS keyword. The spooled file processed is file number 2, QSYSPRT, from job 033194/QPGMR/MONTHEND.

Example 2:

```
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.

Error messages

Parameter dependencies

GCM7014	OUTFILE parameter required with OUTPUT(*OUTFILE).
GCM7015	OUTFILE parameter can only be specified with OUTPUT(*OUTFILE).
GCM7016	OUTMBR parameter can only be specified with OUTPUT(*OUTFILE).

*ESCAPE messages

SIX0045	Unable to display page data for file .

Extract AFP Resources (EXTAFPRSC)

Where allowed to run: All environments (*ALL)
Threadsafe: No

The Extract AFP Resources (EXTAFPRSC) command creates a file containing a member for each AFP resource found in an *AFPDS spooled file's external resource group. The file is suitable for creating local copies of AFP resources using the IBM i commands.

Parameters

Keyword	Description	Choices	Notes
FILE	Spooled file	*Name*	Required, Positional 1
OUTFILE	File to receive output	*Qualified object name*	Required, Positional 2
	Qualifier 1: File to receive output	*Name*	
	Qualifier 2: Library	*Name*, ***CURLIB**	
JOB	Job name	Single values: ***** Other values: *Qualified job name*	Optional
	Qualifier 1: Job name	*Name*	
	Qualifier 2: User	*Name*	
	Qualifier 3: Number	000000-999999	
SPLNBR	Spool file number	1-999999, *ONLY, ***LAST**	Optional

Spooled file (FILE)

Specifies the name of the spooled file to process. CHAR(10)

This is a required parameter.

name   Specify the name of the spooled file.

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. CHAR(10) CHAR(10)

This is a required parameter.

Qualifier 1: File to receive output

name   Specify the name of the file to which the output of the command is directed.

Qualifier 2: Library

*LIBL   All libraries in the thread'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.
name   Specify the name of the library.

Job name (JOB)

Specifies the job that contains the spooled file.

Single values

*   The job that issued the command.

Qualifier 1: Job name

name   Specify the name of the job. CHAR(10)

Qualifier 2: User

 name   Specify the name that identifies the user profile under which the job is run. CHAR(10)

Qualifier 3: Number

 000000-999999 Specify the system assigned job number. CHAR(6)

Spool file number (SPLNBR)

Specifies the number of the spooled file. INT(4)

<u>*LAST</u>	The highest numbered spooled file with the specified file name is used.
ONLY	Only one spooled file in the job has the specified file name; therefore, the number of the spooled file is not necessary.
ANY	The spooled file number is not used to determine which spooled file is used. Use this value when the job system name parameter or the spooled file create date and time parameter is to take precedence over the spooled file number when selecting a spooled file.
1-999999	Specify the number of the spooled file.

Examples

Example 1:

```
EXTAFPRSC  FILE(QSYSPRT) OUTFILE(QGPL/AFPRSC)
```

This command extracts AFP resources to file AFPRSC in library QGPL. The last spooled file named QSYSPRT is processed. The current job is searched to locate the file.

Example 2:

```
EXTAFPRSC  FILE(INVOICES) OUTFILE(QGPL/NEWRSC) SPLNBR(3)
```

The file named INVOICES which is spooled file number 3 in the job executing this command is processed and resources placed in file NEWRSC in library QGPL.

Error messages

*ESCAPE messages

 AFP1012   Resource extraction failed.

Restart/Purge Local Mail (INZLOCAL)

Where allowed to run: All environments (*ALL)
Threadsafe: No

The Restart/Purge Local Mail (INZLOCAL) command ends and restarts IBM i mail components. This may be required to clear problems or to make configuration changes immediately effective.

Parameters

Keyword	Description	Choices	Notes
SMTP	Restart SMTP server	<u>*YES</u>, *NO, Y, N	Optional, Positional 1
SMTPPURGE	Clear SMTP during restart	<u>*NO</u>, *YES, Y, N	Optional, Positional 2
MSF	Restart MSF server	<u>*YES</u>, *NO, Y, N	Optional, Positional 3
MSFPURGE	Clear MSF during restart	<u>*NO</u>, *YES, Y, N	Optional, Positional 4

Restart SMTP server (SMTP)

Specifies the whether the SMTP server is restarted.

<u>*YES</u>	The SMTP server is first ended then started.
***NO**	The command does not restart the SMTP server.

Clear SMTP during restart (SMTPPURGE)

Specifies the whether the SMTP server is purged during the restart.

Note: Clear means that all IBM i SMTP email will be deleted. If you are not sure, select *NO.

<u>*NO</u>	Existing messages are not cleared.
***YES**	Existing messages are cleared.

Restart MSF server (MSF)

Specifies the whether the MSF server is restarted.

<u>*YES</u>	The MSF server is first ended then started.
***NO**	The command does not restart the MSF server.

Clear MSF during restart (MSFPURGE)

Specifies the whether the MSF server is cleared during the restart.

Note: Clear means that mail server framework distributions (emails) will be deleted from this system. If you are not sure, select *NO.

<u>*NO</u>	The MSF is not cleared.
***YES**	The MSF is cleared.

Examples

Example 1:

```
INZLOCAL
```

This command restarts the SMTP server and Mail Server Framework jobs.

Example 2:
```
INZLOCAL   SMTPPURGE(*YES) MSFPURGE(*YES)
```

This command restarts the SMTP server and Mail Server Framework jobs after purging all data they contain.

Error messages

Parameter dependencies

MSU7012	SMTP cannot be cleared unless it is also restarted.
MSU7013	MSF cannot be cleared unless it is also restarted.

Ping SMTP Mail Server (PINGMAIL)

Where allowed to run: All environments (*ALL)
Threadsafe: No

The Ping SMTP Mail Server (PINGMAIL) command establishes an SMTP connection with a remote system to insure it will process email from the local IBM i.

The detailed send and receive data from the connection is recorded in the joblog and can be view using the Display Job Log (DSPJOBLOG) command.

Parameters

Keyword	Description	Choices	Notes
RMTSYS	Remote system	*Character value*, *INTNETADR	Required, Positional 1
SMTPNAME	To SMTP name (email address)	*Character value*, ***NONE**	Optional
SMTPNAME2	From SMTP name (email address)	*Character value*, ***SMTPNAME**	Optional
AUTHUSRNAM	Authentication username	*Character value*, ***NONE**	Optional
AUTHPWD	Authentication password	*Character value*	Optional
PORT	Port	0-65534, **25**	Optional
INTNETADR	Remote internet address	*Character value*	Optional

Remote system (RMTSYS)

Specifies the remote system name of the host with which the Ping SMTP Mail Server operation takes place. To be successful, the name must be valid, and the remote system must be able to communicate with the local system.

This is a required parameter.

> ***INTNETADR**   The INTNETADR parameter is used.
> ***character-value***   Specify the remote system name to use.

To SMTP name (email address) (SMTPNAME)

Specifies an email address to verify with the remote host. A short email message is sent to the address. The message is inserted directly into the mail server under test, bypassing all of IBM i's mail machinery. This makes it is easier to determine if a mail delivery problem is most likely caused by the mail server or by IBM i's configuration.

> ***NONE**   An email address is not specified.
> ***character-value***   Specify the email address to use.

From SMTP name (email address) (SMTPNAME2)

Specifies the from email address included in the test message.

> ***SMTPNAME**   The To SMTP name (email address) is used as the From SMTP name (email address).
> ***character-value***   Specify the email address to use.

Authentication username (AUTHUSRNAM)

Specifies the user name used to authenticate with the remote system.

> ***NONE**   Authentication is not performed.

character-value   Specify the user name to send to the remote system for authentication.

Authentication password (AUTHPWD)

Specifies the password used to authenticate with the remote system.

character-value   Specify the password to send to the remote system for authentication.

Port (PORT)

Specifies the port on which the remote system is listening.

25   Use the well-known port 25 for SMTP.
integer   Specify any port in the range of 1 to 65534 on which the remote system is listening for SMTP connections.

Remote internet address (INTNETADR)

Specifies the remote internet address. The internet address is specified in the form **nnn.nnn.nnn.nnn**, where **nnn** is a decimal number ranging from 0 through 255. An internet address is not valid if it has a value of all binary ones or all binary zeros for the network identifier (ID) portion or the host ID portion of the address. If the internet address is entered from a command line, enclose the address in apostrophes.

character-value   Specify the internet address of the remote system. If the internet address is entered from a command line, enclose the address in apostrophes.

Examples

Example 1:

```
PINGMAIL   RMTSYS(system2.widget.com)
```

This command tests system2 in the widget.com domain to insure that it will process email.

Example 2:

```
PINGMAIL   RMTSYS(*INTNETADR) INTNETADR('168.243.199.2')
```

This command tests the system at IP address 168.243.199.2 to insure that it will process email.

Error messages

Parameter dependencies

MSU7009   When *INTNETADR is specified Remote internet address must be specified.
MSU7010   RMTSYS(*INTNETADR) required when INTNETADR is specified.

*ESCAPE messages

MSU1068   Error encountered verifying mail server.
MSU1077   Connection to mail server at address complete, but errors occurred.

Retrieve Gumbo PTF (RTVGSIPTF)

Where allowed to run: All environments (*ALL)
Threadsafe: No

The Retrieve Gumbo PTF (RTVGSIPTF) command checks a remote system for new product PTFs, and, if available, downloads and installs them.

The command assumes that IBM i has connectivity to the PTF server. Unless you are running your own internal server hosting our PTFs, this means that IBM i has access to the internet and that FTP is not blocked by a firewall.

The command first checks the availability of new PTFs by retrieving a product and release specific file (Ex. q2m90LastPtf.txt) from the remote system and comparing its contents to the last PTF applied locally. If newer PTFs are available, a product and release specific PTF save file (Ex. q2m90all.svf) is downloaded, and the PTFs it contains are loaded and applied.

Note: *GUMBO* only delivers immediate PTFs. Immediate PTFs do not require an IPL and an IPL is never performed by the command.

Parameters

Keyword	Description	Choices	Notes
LICPGM	Product	*Character value*, ***THIS**, 2A55DCR, 2A55DMP, 2A55RDA, 2A55RM1, 2A55SAM, 2A55SM1, 2A55SM2, 2A55XL1	Optional, Positional 1
RLS	Release	*Character value*, ***THIS**	Optional, Positional 2
CHECK	Check	***YES**, *NO, *ONLY	Optional
RMTSYS	Remote system	*Character value*, ***GUMBOFTP**	Optional

Product (LICPGM)

Specifies the product for which PTFs are retrieved. All *GUMBO* products take the form 2A55tla where "tla" identifies the product. Run DSPSFWRSC to determine which *GUMBO* products are installed. CHAR(7)

*THIS	Use the product (2A55SM1) containing this copy of the Retrieve Gumbo PTF (RTVGSIPTF) command.
2A55DCR	Dicer
2A55DMP	Dumpster
2A55RDA	Report Designer
2A55RM1	Report Manager
2A55SAM	Spool-a-Matic
2A55SM1	SpoolMail
2A55SM2	Gumbo Mail
2A55XL1	Excel-erator
character-value	Specifies the 7-character identifier of the product for which PTFs are retrieved.

Release (RLS)

Specifies the release for which PTFs are retrieved. Run DSPSFWRSC to determine which *GUMBO* products are installed. CHAR(6)

*THIS	Use the release of the product (V2R9M0) containing this copy of the Retrieve Gumbo PTF (RTVGSIPTF) command.
character-value	Specify the release level of the product in the format VxRyMz, where Vx is the version number, Ry is the release number, and Mz is the modification level.

Check (CHECK)

Specifies if checking for newer PTFs is performed. CHAR(10)

*YES	Check for newer PTFs is performed before downloading. If newer PTFs are not available, processing stops.
*NO	No check for newer PTFs is performed before downloading.
*ONLY	Only a check for newer PTF availability is performed. Nothing is downloaded, regardless of the result.

Remote system (RMTSYS)

Specifies the name of remote system which serves PTF save files for download. CHAR(255)

*GUMBOFTP	Use **GUMBO's** FTP server ftp.gumbo.com.
character-value	Specify the remote system name to use.

Examples

Example 1:
```
RTVGSIPTF
```

The **GUMBO** FTP server is check for new PTFs available for product 2A55SM1 release V2R9M0. If available, the PTFs are downloaded and installed.

Example 2:
```
RTVGSIPTF  PRODUCT(2A55SM1) RLS(V2R9M0) CHECK(*ONLY)
```

The **GUMBO** FTP server is check for new PTFs available for product 2A55SM1 release V2R9M0. No other processing is performed.

Error messages

*ESCAPE messages

PID1007	Retrieve PTF failed for product .

Retrieve Page Data (RTVPAGDTA)

Where allowed to run: Compiled CL (*BPGM *IPGM *BMOD *IMOD)
Threadsafe: No

The Retrieve Page Data (RTVPAGDTA) command retrieves data from a specific location in a spooled file. The requested data is returned in a Control Language (CL) program variable.

Parameters

Keyword	Description	Choices	Notes
FILE	Spooled file	*Name*, *LASTCRT	Required, Positional 1
RTNDATA	CL var for data (1-255)	*Character value*	Required, Positional 2
PAGDTA	Page data	*Element list*	Required, Positional 3
	Element 1: Line	1-255, *STRPAGGRP, *DOCIDXTAG, *DOCIDXPAG, *DOCIDXGRP, *STRPAGGRPP, *DOCIDXTAGP, *DOCIDXGRPP	
	Element 2: Position	1-378, 0	
	Element 3: Length	1-255, 0	
PAGE	Page number	*Unsigned integer*, **1**, *LAST	Optional, Positional 4
JOB	Job name	Single values: ***** Other values: *Qualified job name*	Optional, Positional 5
	Qualifier 1: Job name	*Name*	
	Qualifier 2: User	*Name*	
	Qualifier 3: Number	000000-999999	
SPLNBR	Spool file number	1-999999, *ONLY, ***LAST**	Optional, Positional 6

Spooled file (FILE)

Specifies the name of the spooled file to process. CHAR(10)

This is a required parameter.

*LASTCRT The last spooled file created by the current job or thread is identified using the QSPRILSP API and processed. This is useful for jobs that create spooled files under other user profiles, which consequently end up in the user's QPRTJOB. When *LASTCRT is specified, the JOB() and SPLNBR() parameters are ignored.

name Specify the name of the spooled file.

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. (CHAR).

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. INT(2), INT(2), INT(2) The most accurate method for determining the data location is to print a formatted dump of a sample spooled file using our Dump Page Index Positions (DMPPIP) command.

This is a required parameter.

Element 1: Line

***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.

1-255 Specify the line number where the data is located on the page.

Element 2: Position

1-378 Specify the position where the data is located in the line. Valid values range from 1 through 378. The value specified plus the data length should be less than the number of print positions in the spooled file.

Element 3: Length

1-255 Specify the length of the data. The value specified plus the start position should be less than the number of print positions in the spooled file.

Page number (PAGE)

Specifies the page number from which data is retrieved. INT(4)

1	Data is retrieved from the first page of the spooled file.
*LAST	Data is retrieved from the last page of the spooled file.
integer	Specifies the page from which data is retrieved.

Job name (JOB)

Specifies the job that contains the spooled file.

Single values

*	The job that issued the command.

Qualifier 1: Job name

name	Specify the name of the job. CHAR(10)

Qualifier 2: User

name	Specify the name that identifies the user profile under which the job is run. CHAR(10)

Qualifier 3: Number

000000-999999	Specify the system assigned job number. CHAR(6)

Spool file number (SPLNBR)

Specifies the number of the spooled file. INT(4)

*LAST	The highest numbered spooled file with the specified file name is used.
*ONLY	Only one spooled file in the job has the specified file name; therefore, the number of the spooled file is not necessary.
*ANY	The spooled file number is not used to determine which spooled file is used. Use this value when the job system name parameter or the spooled file create date and time parameter is to take precedence over the spooled file number when selecting a spooled file.
1-999999	Specify the number of the spooled file.

Examples

Example 1:

```
RTVPAGDTA   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.

Error messages

*ESCAPE messages

SIX0049	Unable to retrieve page data for file .

Send Spool Mail (SNDSPLMAIL)

Where allowed to run: All environments (*ALL)
Threadsafe: No

The Send Spool Mail (SNDSPLMAIL) command converts an IBM i spooled file and sends it as email to a recipient.

Parameters

Keyword	Description	Choices	Notes
FILE	Spooled file	*Name*, ***LASTCRT**	Required, Positional 1
JOB	Job name	Single values: ***** Other values: *Qualified job name*	Optional
	Qualifier 1: Job name	*Name*	
	Qualifier 2: User	*Name*	
	Qualifier 3: Number	000000-999999	
SPLNBR	Spool file number	1-999999, *ONLY, ***LAST**	Optional
TRANSFORM	Transform to perform	*Character value*, ***TXT**, *PDFLETTER, *PDFLEGAL, *PDFSTATEMENT, *PDFEXECUTIVE, *PDFLEDGER, *PDFA3, *PDFA4, *PDFA5, *PDFB4, *PDFB5, *PDFLETTERLEGAL, *PDFLEGALLETTER, *PDFALETTER, *PDFALEGAL, *PDFASTATEMENT, *PDFAEXECUTIVE, *PDFALEDGER, *PDFAA3, *PDFAA4, *PDFAA5, *PDFAB4, *PDFAB5, *PDFALTRLGL, *PDFALGLLTR, *PDFPAGESIZE, *RTFLETTER, *RTFLEGAL, *RTFSTATEMENT, *RTFEXECUTIVE, *RTFLEDGER, *RTFA3, *RTFA4, *RTFA5, *RTFB4, *RTFB5, *HTMLCSS, *HTMLBASIC, *POSTSCRIPT, *AFPPRINTFILE, *AFPPRINTFILE2, *TIFFLETTER, *TIFFLEGAL, *TIFFEXECUTIVE, *TIFFLEDGER, *TIFFA3, *TIFFA4, *TIFFA5, *TIFFB4, *TIFFB5, *TIFFCONT80, *TIFFCONT132, *TIFF, *TIFFG4, *TIFFPB, *FFTBASIC, *TXTFF, *TXTTRIM, *TXTTRIMFL, *WSCST, *NONE, *NONEPDF, *WSCSTLETTER, *WSCSTLEGAL, *WSCSTEXECUTIVE, *WSCSTA4, *WSCSTA5, *WSCSTB5, *WSCSTCONT80, *WSCSTCONT132, *CRLF, *PDF, *PDFLETTERBASIC, *PDFLEGALBASIC, *PDFA4BASIC, *PDF811, *PDF814, *PDF811814, *PDF814811, *RTF811, *RTF814	Optional
TOSMTPNAME	To (recipient)	Single values: ***CURRENT**, *MAILTAG, *PAGDTA, *SPLFOWN, *SPLFCRT, *USRDFNDTA, *USRDFNTXT, *USRDTAUP, *NONE, *STRPAGGRP Other values (up to 300 repetitions): *Element list*	Optional
	Element 1:	*Character value*, *USRID, *USRPRF	
WSCST	Workstation customizing object	Single values: ***NONE** Other values: *Qualified object name*	Optional
	Qualifier 1: Workstation customizing object	*Name*	
	Qualifier 2: Library	*Name*, ***LIBL**, *CURLIB	
TOUSRID	To (distribution list)	Single values: ***NONE**, *GATEWAY, *CURRENT, *SPLFOWN, *SPLFCRT Other values: *Element list*	Optional
	Element 1: User ID	*Character value*	
	Element 2: Address	*Character value*	
SEND	Send as	***ATTACH**, *NOTE, *TEXTHTML, *TEXTPLAIN	Optional
SUBJECT	Subject	*Character value*, ***DEFAULT**, *NONE, *ACGCDE, *CRTSYS, *CRTUSR, *FILE, *FILE8, *FORMTYPE, *JOBNAM, *JOBNAM8, *JOBNBR, *JOBUSR, *JOBUSR8, *OUTQ, *PAGDTA, *PAGECOUNT, *PAGECNTZ, *PGM, *PGM8, *PRTTXT, *SPLCDAT, *SPLCTIM, *SPLCCYY, *SPLCYY, *SPLCMM,	Optional

		*SPLCDD, *SPLNBR, *SPLNBRZ, *USRDTA, *USRDFNDTA, *USRDFNTXT	
MSG	Message	Single values: ***DEFAULT**, *USRDFNDTA, *USRDFNTXT, *NONE Other values: *Element list*	Optional
	Element 1: Content	*Character value*	
	Element 2: Send as	***TEXTPLAIN**, *TEXTHTML	
PCFILE	Attachment file name	*Character value*, ***DEFAULT**	Optional
EXTENSION	Attachment extension	*Character value*, ***DFT**	Optional
CC	Cc (carbon copy)	Single values: ***NONE** Other values (up to 300 repetitions): *Element list*	Optional
	Element 1:	*Character value*, *CURRENT, *MAILTAG, *PAGDTA, *SPLFOWN, *SPLFCRT, *USRDFNDTA, *USRDFNTXT, *USRDTAUP, *USRID	
BCC	Bcc (blind carbon copy)	Single values: ***NONE** Other values (up to 300 repetitions): *Element list*	Optional
	Element 1:	*Character value*, *CURRENT, *MAILTAG, *PAGDTA, *SPLFOWN, *SPLFCRT, *USRDFNDTA, *USRDFNTXT, *USRDTAUP, *USRID	
FROM	From (originator)	*Character value*, ***CURRENT**, *SPLFOWN, *SPLFCRT, *MAILSENDER	Optional
CFMDEL	Confirmation of delivery	***NO**, *YES, *OBS, Y, N, O	Optional
REPLYTO	Reply to	Single values: ***NONE** Other values (up to 300 repetitions): *Element list*	Optional
	Element 1:	*Character value*, *CURRENT, *MAILTAG, *PAGDTA, *SPLFOWN, *SPLFCRT, *USRDFNDTA, *USRDFNTXT, *USRDTAUP, *USRID	
CCSID	Target coded character set id	1-65533, *UNICODE, ***WINANSI**, *UTF8, *BIG5, *GBK, *ISO88591, *ISO88592, *ISO88595, *ISO88597, *ISO88598, *ISO88599, *USASCII, *ISO-8859-1, *ISO-8859-2, *ISO-8859-5, *ISO-8859-7, *ISO-8859-8, *ISO-8859-9, *US-ASCII	Optional
SRCCCSID	Source coded character set id	1-65533, ***KBDTYPE**, *SPLF, *SYSVAL, *JOBDFT	Optional
CHRENC	Character encoding of mail	***UTF8**, *ISO88591, *ISO88592, *ISO88595, *ISO88596, *ISO88597, *ISO88598, *ISO88599, *BIG5, 1208, 819, 912, 915, 1089, 813, 916, 920, 950	Optional
CMDCHRID	Command character identifier	Single values: ***SRCCCSID**, *SYSVAL, *JOBDFTCCSID Other values: *Element list*	Optional
	Element 1: Graphic character set	1-32767	
	Element 2: Code page	1-32767	
PAGERANGE	Page range to print	Single values: *SPLF Other values: *Element list*	Optional
	Element 1: Starting page	*Integer*, **1**, *ENDPAGE	
	Element 2: Ending page	*Integer*, ***END**	
PAGDTA	Page data	Single values: ***STRPAGGRP**, *NONE Other values: *Element list*	Optional
	Element 1: Line	1-255	
	Element 2: Position	1-378	
	Element 3: Length	1-255	
ADDMAPPGM	Address mapping program	Single values: ***NONE** Other values: *Qualified object name*	Optional
	Qualifier 1: Address mapping program	*Name*	
	Qualifier 2: Library	*Name*, ***LIBL**, *CURLIB	
DLTSPLF	Delete file after processing	***NO**, *YES, Y, N	Optional
INCOBJ	Include object	Single values: ***NONE** Other values (up to 64 repetitions): *Element list*	Optional
	Element 1: Name	*Path name*	
	Element 2: Send as	*NOTE, ***ATTACH**, *TEXTPLAIN, *TEXTHTML, *ATTACHPDF, *ATTACHPS	
	Element 3: Multipart/alternative group	1-9, ***NONE**	

PDFDOCSEC	PDF document security	*Element list*	Optional
	Element 1: Owner password	*Character value*, **' '**, *NONE	
	Element 2: User password	*Character value*, **' '**, *NONE	
	Element 3: Allow print	***YES**, *NO, 0, 1	
	Element 4: Allow change	***YES**, *NO, 0, 1	
	Element 5: Allow copy	***YES**, *NO, 0, 1	
	Element 6: Allow annotation	***YES**, *NO, 0, 1	
	Element 7: Encryption specification	***V1**, *V2, *V5, 0, 16, 32	
	Element 8: Allow form fill-in and sign	***YES**, *NO, 0, 1	
	Element 9: Allow accessibility inspection	***YES**, *NO, 0, 1	
	Element 10: Allow document assembly	***YES**, *NO, 0, 1	
	Element 11: Allow print as image	***YES**, *NO, 0, 1	
PDFDOCTTL	PDF document title	*Character value*, ***NONE**, *ACGCDE, *PRTTXT, *USRDTA, *USRDFNDTA, *USRDFNTXT	Optional
PDFDOCSBJ	PDF document subject	*Character value*, ***DEFAULT**, *ACGCDE, *PRTTXT, *USRDTA, *USRDFNDTA, *USRDFNTXT	Optional
PDFDOCATH	PDF document author	*Character value*, ***CRTUSRPRF**, *NONE	Optional
PDFDOCKWD	PDF document keywords	*Character value*, ***NONE**	Optional
PDFFNTIMB	PDF font imbedding	Single values: ***DEFAULT**, *NONE, *AUTO, *ALL, *TYPES13 Other values (up to 5 repetitions): *TYPE3, *TYPE1, *FGID, *TRUETYPE, 0, 1, 2, 3, 4, 8, 16, 32, -3	Optional
PDFDOCOPN	PDF document open options	*Element list*	Optional
	Element 1: Initial page mode	***DEFAULT**, *PAGEONLY, *BOOKMARK, *THUMBNAIL, *FULLSCREEN, X'00', 1, 2, 3, 4	
	Element 2: Page mode after *FULLSCREEN	***DEFAULT**, *PAGEONLY, *BOOKMARK, *THUMBNAIL, X'00', 1, 2, 3	
	Element 3: Page layout	***DEFAULT**, *SINGLEPAGE, *ONECOL, *TWOCOLLEFT, *TWOCOLRIGHT, X'00', 1, 2, 3, 4	
	Element 4: Hide tool bars	***NO**, *YES, 0, 1	
	Element 5: Hide menu bar	***NO**, *YES, 0, 1	
	Element 6: Hide user interface elements	***NO**, *YES, 0, 1	
	Element 7: Resize window to initial page	***NO**, *YES, 0, 1	
	Element 8: Center window on screen	***NO**, *YES, 0, 1	
	Element 9: Display document title	***NO**, *YES, 0, 1	
	Element 10: Magnification	8-1600, ***DEFAULT**, *PAGE, *WIDTH, *HEIGHT, *PCT1600, *PCT800, *PCT400, *PCT200, *PCT150, *PCT125, *PCT100, *PCT75, *PCT50, *PCT25	
	Element 11: Page number	*Integer*, ***DEFAULT**, *LAST	
	Element 12: Page scaling	***DEFAULT**, *NONE, X'00', 1	
	Element 13: Duplex	***DEFAULT**, *SIMPLEX, *SHORTEDGE, *LONGEDGE, X'00', 1, 2, 3	
	Element 14: Pick tray by page size	***NO**, *YES, 0, 1	
PDFOVL	PDF media overlay	Single values: ***NONE**, *GREENBAR, *GREENBARP, *BLUEBAR, *BLUEBARP, *COPY Other values: *Qualified object name*	Optional
	Qualifier 1: PDF media overlay	*Name*	
	Qualifier 2: Library	*Name*, ***LIBL**, *CURLIB	
PDFBKMSTY	PDF bookmark style	***ONELEVEL**, *NONE, *TWOLEVEL, 0, 1, 2	Optional
PDFBKMSRC	PDF bookmark data source	Values (up to 8 repetitions): *Element list*	Optional
	Element 1: Line	1-255, ***DOCIDXTAGP**, *DOCIDXTAG, *DOCIDXTAGG, *STRPAGGRP	

	Element 2: Position	1-378, 0	
	Element 3: Length	1-255, 0	
	Element 4: Name	*Character value*	
FIDELITY	Fidelity	*Name*, **<u>*RESOURCE</u>**, *CONTENT	Optional
SGNKEY	Signing key	Single values: **<u>*DEFAULT</u>**, *NONE Other values: *Element list*	Optional
	Element 1: Application ID	*Character value*	
PDFSGNKEY	PDF document signing key	Single values: **<u>*DEFAULT</u>**, *NONE Other values: *Element list*	Optional
	Element 1: Application ID	*Character value*	
HTMCSS	Style sheet	*Path name*, **<u>*DEFAULT</u>**	Optional
PRIORITY	Priority	**<u>*NONE</u>**, *HIGHEST, *HIGH, *NORMAL, *LOW, *LOWEST, *HIGHO, *NORMALO, *LOWO	Optional
JOBSYSNAME	Job system name	*Name*, **<u>*ONLY</u>**, *CURRENT, *ANY	Optional
CRTDATE	Spooled file created	Single values: **<u>*ONLY</u>**, *LAST Other values: *Element list*	Optional
	Element 1: Creation date	*Date*	
	Element 2: Creation time	*Time*, **<u>*ONLY</u>**, *LAST	
USRID	Obsolete (Originator)	Single values: **<u>*CURRENT</u>**, *DEFAULT, *SPLFOWN, *SPLFCRT, *MAILSENDER Other values: *Element list*	Optional
	Element 1: User ID	*Character value*	
	Element 2: Address	*Character value*	

Spooled file (FILE)

Specifies the name of the spooled file to process. CHAR(10)

This is a required parameter.

*LASTCRT	The last spooled file created by the current job or thread is identified using the QSPRILSP API and processed. This is useful for jobs that create spooled files under other user profiles, which consequently end up in the user's QPRTJOB. When *LASTCRT is specified, the JOB() and SPLNBR() parameters are ignored.
name	Specify the name of the spooled file.

Job name (JOB)

Specifies the job that contains the spooled file.

Single values

<u>*</u>	The job that issued the command.

Qualifier 1: Job name

name	Specify the name of the job. CHAR(10)

Qualifier 2: User

name	Specify the name that identifies the user profile under which the job is run. CHAR(10)

Qualifier 3: Number

000000-999999	Specify the system assigned job number. CHAR(6)

Spool file number (SPLNBR)

Specifies the number of the spooled file. INT(4)

<u>*LAST</u>	The highest numbered spooled file with the specified file name is used.
*ONLY	Only one spooled file in the job has the specified file name; therefore, the number of the spooled file is not necessary.

*ANY	The spooled file number is not used to determine which spooled file is used. Use this value when the job system name parameter or the spooled file create date and time parameter is to take precedence over the spooled file number when selecting a spooled file.
1-999999	Specify the number of the spooled file.

Transform to perform (TRANSFORM)

Specifies the manner in which the spooled file is transformed. CHAR(15)

<u>*TXT</u>	Use ASCII Text conversion.
*TXTFF	Use ASCII Text conversion ending each page with a form feed instead of filling with blank lines.
*TXTTRIM	Use ASCII Text conversion filling all but the last page with blank lines.
*TXTTRIMFL	Use ASCII Text conversion filling all but the last page with blank lines. In addition, each line is padded with blanks to the full width of the spooled file.
*PDFLETTER	Use PDF Portable Document Format conversion with a page size of 8.5" x 11".
*PDFLEGAL	Use PDF Portable Document Format conversion with a page size of 8.5" x 14".
*PDFSTATEMENT	Use PDF Portable Document Format conversion with a page size of 5.5" x 8.5".
*PDFEXCUTIVE	Use PDF Portable Document Format conversion with a page size of 7.25" x 10.5".
*PDFLEDGER	Use PDF Portable Document Format conversion with a page size of 11" x 17".
*PDFA3	Use PDF Portable Document Format conversion with a page size of A3.
*PDFA4	Use PDF Portable Document Format conversion with a page size of A4.
*PDFA5	Use PDF Portable Document Format conversion with a page size of A5.
*PDFB4	Use PDF Portable Document Format conversion with a page size of B4.
*PDFB5	Use PDF Portable Document Format conversion with a page size of B5.
*PDFLETTERLEGAL	Use PDF Portable Document Format conversion with a page size of 8.5" x 11" for drawer 1 and 8.5" x 14" for drawer 2.
*PDFLEGALLETTER	Use PDF Portable Document Format conversion with a page size of 8.5" x 14" for drawer 1 and 8.5" x 11" for drawer 2.
*PDFALETTER	Use PDF/A Portable Document Format conversion with a page size of 8.5" x 11".
*PDFALEGAL	Use PDF/A Portable Document Format conversion with a page size of 8.5" x 14".
*PDFASTATEMENT	Use PDF/A Portable Document Format conversion with a page size of 5.5" x 8.5".
*PDFAEXCUTIVE	Use PDF/A Portable Document Format conversion with a page size of 7.25" x 10.5".
*PDFALEDGER	Use PDF/A Portable Document Format conversion with a page size of 11" x 17".
*PDFAA3	Use PDF/A Portable Document Format conversion with a page size of A3.
*PDFAA4	Use PDF/A Portable Document Format conversion with a page size of A4.
*PDFAA5	Use PDF/A Portable Document Format conversion with a page size of A5.
*PDFAB4	Use PDF/A Portable Document Format conversion with a page size of B4.
*PDFAB5	Use PDF/A Portable Document Format conversion with a page size of B5.
*PDFALTRLGL	Use PDF/A Portable Document Format conversion with a page size of 8.5" x 11" for drawer 1 and 8.5" x 14" for drawer 2.
*PDFALGLLTR	Use PDF/A Portable Document Format conversion with a page size of 8.5" x 14" for drawer 1 and 8.5" x 11" for drawer 2.
*PDFPAGESIZE	Use PDF Portable Document Format conversion using the page size as described by the spooled file's attributes.
*RTFLETTER	Use RTF Microsoft Rich Text Format conversion with a page size of 8.5" x 11".
*RTFLEGAL	Use RTF Microsoft Rich Text Format conversion with a page size of 8.5" x 14".
*RTFSTATEMENT	Use RTF Microsoft Rich Text Format conversion with a page size of 5.5" x 8.5".
*RTFEXCUTIVE	Use RTF Microsoft Rich Text Format conversion with a page size of 7.25" x 10.5".
*RTFLEDGER	Use RTF Microsoft Rich Text Format conversion with a page size of 11" x 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.
*HTMLCSS	Use HTM Hyper Text Markup Language Format conversion with a style sheet.
*HTMLBASIC	Use HTML Hyper Text Markup Language Format conversion.
*POSTSCRIPT	Use PostScript conversion.

*FFTBASIC	Use FFT IBM Final Form Text conversion.
*TIFFLETTER	Use TIFF Tag Image File Format Group 4 specification conversion with letter size paper implied.
*TIFFLEGAL	Use TIFF Tag Image File Format Group 4 specification conversion with legal size paper implied.
*TIFFEXECUTIVE	Use TIFF Tag Image File Format Group 4 specification conversion with executive size paper implied.
*TIFFLEDGER	Use TIFF Tag Image File Format Group 4 specification conversion with ledger size paper implied.
*TIFFA3	Use TIFF Tag Image File Format Group 4 specification conversion with A3 size paper implied.
*TIFFA4	Use TIFF Tag Image File Format Group 4 specification conversion with A4 size paper implied.
*TIFFA5	Use TIFF Tag Image File Format Group 4 specification conversion with A5 size paper implied.
*TIFFB4	Use TIFF Tag Image File Format Group 4 specification conversion with B4 size paper implied.
*TIFFB5	Use TIFF Tag Image File Format Group 4 specification conversion with B5 size paper implied.
*TIFFCONT80	Use TIFF Tag Image File Format Group 4 specification conversion with continuous 8.0 inch paper implied.
*TIFFCONT132	Use TIFF Tag Image File Format Group 4 specification conversion with continuous 13.2 inch paper implied.
*TIFF	Use TIFF Tag Image File Format Group 4 specification conversion.
*TIFFPB	Use TIFF 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 IBM i Host Print Transform conversion with the specified workstation customizing object.
*NONE	Use no conversion conversion.
*NONEPDF	Same processing as *NONE but with an implied default extension of .PDF. This is useful for processing *USERASCII spooled files containing .PDF documents.
character-value	Use HPT IBM i Host Print Transform conversion.

To (recipient) (TOSMTPNAME)

Specifies the email address(es) to which the spooled file is sent. CHAR(128)

Single values

<u>***CURRENT**</u>	The email address stored in the directory entry associated with the user running the command is used.
	Note: If a value is specified on the To (distribution list) (TOUSRID) parameter it overrides *CURRENT.
*MAILTAG	The email address specified in the MAILTAG() keyword as stored in the spooled file's User Defined Data is used.
	Note: Instructions for storing an email address in the spooled file's User Defined Data can be found in: *Info Print Server User's Guide G544-5775*.
*PAGDTA	Recipient information is taken from data on each page of the spooled file. The location of the data is specified using the Page data (PAGDTA) parameter. When no program name is specified on the Address mapping program (ADDMAPPGM) parameter, the data is used as an email address. When a program name is specified on the Address mapping program (ADDMAPPGM) parameter, the data is passed to the program and the email address returned by it is used.
	All pages with identical data are grouped together and sent as a single email. Since there can be different data on various pages, *PAGDTA results in a separate email for each unique data. Pages that are not associated with any recipient information (i.e. pages outside a page group and PAGDTA(*STRPAGRP) specified) are not sent.
*SPLFOWN	The email address stored in the directory entry associated with the user that owns the spooled file is used.
*SPLFCRT	The email address stored in the directory entry associated with the user who created the spooled file is used. This can differ from the owning user if the spooled file was created on another system.
*USRDFNDTA	The email address stored in the spooled file's User Defined Data is used.
	Note: Similar to *MAILTAG but without the keyword MAILTAG().
*USRDFNTXT	The email address stored in the spooled file's User Defined Text is used.

*USRDTAUP	The spooled file's user data is treated as a user name and the email address stored in the directory entry associated with the user name is used.
*NONE	An email address is not specified.
*STRPAGGRP	This special value has been replaced by *PAGDTA with PAGDTA(*STRPAGGRP) specified.

Other values (up to 300 repetitions)

email-address	Specify the email address of the recipient.

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)

Single values

*NONE	No work station customizing object is specified.

Qualifier 1: Workstation customizing object

name	Specify the name of the work station customizing object.

Qualifier 2: Library

*LIBL	All libraries in the thread'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.
name	Specify the name of the library.

To (distribution list) (TOUSRID)

Note: If this parameter is specified and the To (recipient) (TOSMTPNAME) parameter is not specified, the entered value overrides the default value of the To (recipient) (TOSMTPNAME) parameter.

Specifies the Distribution list or network user to receive the email. CHAR(8), CHAR(8)

Single values

*NONE	A network user or distribution list is not specified.
*CURRENT	The user ID and address of the user running the command are used.
*SPLFCRT	The user ID and address of the user who created the spooled file are used. This can differ from the owning user if the spooled file was created on another system.
*SPLFOWN	The user ID and address of the user that owns the spooled file are used.
*GATEWAY	The context switching internet gateway is used to send to the email address specified.
	Note: This value is obsolete but included for compatibility reasons.

Element 1: User ID

character-value	Specify the user ID (DEN) of the network user. CHAR(8)

Element 2: Address

character-value	Specify the address (DGN) of the network user. CHAR(8)

Send as (SEND)

Specifies the manner in which the spooled file is sent. CHAR(10)

*ATTACH	Send the spooled file as an attached file using MIME. For TXT transforms the MIME part specifies a content type of "text/plain". For the PDF transforms the MIME part specifies a content type of "application/pdf". For PostScript transforms the MIME part specifies a content type of "application/postscript". For HTML transforms the MIME part specifies a content type of "text/html". For all other transforms, "application/octet-stream" is specified.
*TEXTHTML	Send the results of converting the spooled file in the body of the mail message specifying content type "text/html".

Note: Some servers disregard this request and form an attachment from the message in all cases. Some servers disregard this request for the second and subsequent body parts. If this is the case, try MSG(*NONE).

*TEXTPLAIN	Send the results of converting the spooled file in the body of the mail message specifying content type "text/plain".

Note: Some servers disregard this request and form an attachment from the message in all cases. Some servers disregard this request for the second and subsequent body parts. If this is the case, try MSG(*NONE).

*NOTE	Same as *TEXTPLAIN which is preferred.

Subject (SUBJECT)

Specifies the subject for the generated email. CHAR(128)

*DEFAULT	The subject of the email is generated from spooled file attributes.
*NONE	No subject is included in the email.
character-value	Specify the subject of the email.

SpoolMail provides several special values that can used to construct dynamic subject content. When the special values are found, the associated data is blank trimmed and substituted into the subject specified when it is processed. If the data associated with a special value is blank, "BLANK" is substituted. The special values must be delimited by an underscore (_) a period ('.') a slash ('/' or '\') or a blank.

The spooled file splitting special values are:

*PAGDTA	The data found based on criteria specified in the Page data (PAGDTA) parameter.

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 IBM i.
*CRTUSR	User creating originally CHAR(10). This can differ from the *JOBUSR value if the spooled file was sent from another IBM i.
*FILE	Spooled file name CHAR(10).
*FILE8	Same as *FILE truncated to CHAR(8).
*FORMTYPE	Spooled file form type CHAR(10). Make sure special values in the data are compatible with usage. For example few file systems allow * in a name. If the form type is *STD, the name will be invalid.
*JOBNAM	Name portion of the job containing the spooled file CHAR(10).
*JOBNAM8	Same as *JOBNAM truncated to CHAR(8).
*JOBNBR	Job number of the job containing the spooled file CHAR(6).
*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.
*USRDFNDTA	User defined data CHAR(255).

*USRDFNTXT	User-defined text taken from the user profile when the spooled file was created. Add text to a user profile using the CHGUSRPRTI command CHAR(100).
*USRDTA	User data CHAR(10).

Message (MSG)

Specifies a message to include in the email, and its content type.

Single values

*DEFAULT	The message in the email is generated from spooled file attributes.
*USRDFNDTA	The spooled file's user defined data is used as the message.
*USRDFNTXT	The spooled file's user defined text is used as the message.
*NONE	This parameter does not place a message in the email.

Element 1: Content

character-value	Specify the content placed in the email. CHAR(5000)

Element 2: Send as

*TEXTPLAIN	Copy the content into the body of the mail message specifying content type text/plain.
	Line breaks can be added by placing hex value X'0D25' in the data. See manual section "Adding Line Breaks to the Message" for coding details.
*TEXTHTML	Copy the content into the body of the mail message specifying content type text/html.
	Line breaks can be added by placing ' ' in the data. See manual section "Adding Line Breaks to the Message" for coding details.

Attachment file name (PCFILE)

Specifies the file name to use when naming the attachment file. This parameter is only used when SEND(*ATTACH) is specified. CHAR(32)

*DEFAULT	A default file name is generated.
name	Specify the name of the attached file.

Attachment extension (EXTENSION)

Specifies the file extension to use when naming the attachment file. This parameter is only used when SEND(*ATTACH) is specified. CHAR(3)

*DFT	The extension is determined by the transform performed:

Transform	- Extension.
*TXTxxx	- txt
*PDFxxx	- pdf
*RTFxxx	- rtf
*HTMxxx	- htm
*NONE	- spl
*POSTSCRIPT	- ps
*FFTxxx	- fft
*AFPxxx	- afp
*TIFFxx	- tif
<all other>	- hpt

character-value	Specify the attachment file extension to use.

Cc (carbon copy) (CC)

Specifies the email address(es) to which a copy is sent. CHAR(128)

Single values

*NONE   An email address is not specified.

Other values (up to 300 repetitions)

*CURRENT   The email address stored in the directory entry associated with the user running the command is used.
*MAILTAG   The email address specified in the MAILTAG() keyword as stored in the spooled file's User Defined Data is used.

> **Note:** Instructions for storing an email address in the spooled file's User Defined Data can be found in: *Info Print Server User's Guide G544-5775*.

*PAGDTA   Recipient information is taken from data on each page of the spooled file. The location of the data is specified using the Page data (PAGDTA) parameter. When no program name is specified on the Address mapping program (ADDMAPPGM) parameter, the data is used as an email address. When a program name is specified on the Address mapping program (ADDMAPPGM) parameter, the data is passed to the program and the email address returned by it is used.

All pages with identical data are grouped together and sent as a single email. Since there can be different data on various pages, *PAGDTA results in a separate email for each unique data. Pages that are not associated with any recipient information (i.e. pages outside a page group and PAGDTA(*STRPAGRP) specified) are not sent.

*SPLFOWN   The email address stored in the directory entry associated with the user that owns the spooled file is used.
*SPLFCRT   The email address stored in the directory entry associated with the user who created the spooled file is used. This can differ from the owning user if the spooled file was created on another system.
*USRDFNDTA   The email address stored in the spooled file's User Defined Data is used.

> **Note:** Similar to *MAILTAG but without the keyword MAILTAG().

*USRDFNTXT   The email address stored in the spooled file's User Defined Text is used.
*USRDTAUP   The spooled file's user data is treated as a user name and the email address stored in the directory entry associated with the user name is used.
*USRID   Specify the directory entry or distribution list that supplies the email address(es). The correct form is: ***USRID:NAME:ADDRESS** where **NAME** is either a directory entry's "User ID" or a distribution list's "List ID" and where **ADDRESS** is either a directory entry's "Address" or a distribution list's "List ID qualifier". The email address found on the directory entry, or the email address found on each directory entry found on the distribution list, is/are used.
*USRPRF   Specify the user profile that supplies the email address. The correct form is: ***USRPRF:NAME** where **NAME** is a user profile. The directory entry associated with the profile is located and the email address contained in the directory entry is used.
character-value   Specify the email address to receive a copy.

Bcc (blind carbon copy) (BCC)

Specifies the email address(es) to which a blind copy is sent. CHAR(128)

Single values

*NONE   An email address is not specified.

Other values (up to 300 repetitions)

*CURRENT   The email address stored in the directory entry associated with the user running the command is used.
*MAILTAG   The email address specified in the MAILTAG() keyword as stored in the spooled file's User Defined Data is used.

> **Note:** Instructions for storing an email address in the spooled file's User Defined Data can be found in: *Info Print Server User's Guide G544-5775*.

*PAGDTA   Recipient information is taken from data on each page of the spooled file. The location of the data is specified using the Page data (PAGDTA) parameter. When no program name is specified on the Address mapping program (ADDMAPPGM) parameter, the data is used as an email address. When a program

name is specified on the Address mapping program (ADDMAPPGM) parameter, the data is passed to the program and the email address returned by it is used.

All pages with identical data are grouped together and sent as a single email. Since there can be different data on various pages, *PAGDTA results in a separate email for each unique data. Pages that are not associated with any recipient information (i.e. pages outside a page group and PAGDTA(*STRPAGRP) specified) are not sent.

*SPLFOWN The email address stored in the directory entry associated with the user that owns the spooled file is used.

*SPLFCRT The email address stored in the directory entry associated with the user who created the spooled file is used. This can differ from the owning user if the spooled file was created on another system.

*USRDFNDTA The email address stored in the spooled file's User Defined Data is used.

> **Note:** Similar to *MAILTAG but without the keyword MAILTAG().

*USRDFNTXT The email address stored in the spooled file's User Defined Text is used.

*USRDTAUP The spooled file's user data is treated as a user name and the email address stored in the directory entry associated with the user name is used.

*USRID Specify the directory entry or distribution list that supplies the email address(es). The correct form is: ***USRID:NAME:ADDRESS** where **NAME** is either a directory entry's "User ID" or a distribution list's "List ID" and where **ADDRESS** is either a directory entry's "Address" or a distribution list's "List ID qualifier". The email address found on the directory entry, or the email address found on each directory entry found on the distribution list, is/are used.

*USRPRF Specify the user profile that supplies the email address. The correct form is: ***USRPRF:NAME** where **NAME** is a user profile. The directory entry associated with the profile is located and the email address contained in the directory entry is used.

character-value Specify the email address to receive a blind copy.

From (originator) (FROM)

Specifies the email address that appears as the **From** on the generated the email. You can use this to control the address used when the recipient replies to the email.

Note: One or more of the special values for this parameter access the system distribution directory to determine an email address based on the implied user profile. If the user profile does not have a directory entry (I.e. the user has not been enrolled), the user name is used to construct an email address. If the user has been enrolled but an email address has not been specified on the directory entry, the user id and address are used to construct an email address. In either case, the constructed address, in all likelihood, is not a valid email address. The email will deliver but recipient replies will be lost (bounce).

<u>*CURRENT</u> The email address stored in the directory entry associated with the user running the command is used.

Note: If a value is specified on the Obsolete (Originator) (USRID) parameter it overrides *CURRENT.

*SPLFOWN The email address stored in the directory entry associated with the user that owns the spooled file is used.

*SPLFCRT The email address stored in the directory entry associated with the user who created the spooled file is used. This can differ from the owning user if the spooled file was created on another system.

*MAILSENDER The email address found in the directory entry associated with the user profile specified in the MAILSENDER() keyword as stored in the spooled file's User Defined Data is used.

> **Note:** Instructions for storing a sending user profile in the spooled file's User Defined Data can be found in: *Info Print Server User's Guide G544-5775*.

character-value Specify the email address of the originator.

Confirmation of delivery (CFMDEL)

Specifies whether a request for a read receipt is sent with the message. Message recipients can choose whether or not to send receipts. If the message recipient agrees to send a read receipt, the receipt will be sent when the message is opened.

*NO	Confirmation of delivery is not requested.
*YES	Confirmation of delivery is requested.
*OBS	Confirmation of delivery is requested as with ***YES** but the obsolete non-standard "Return-Receipt-To" header field is also included in the message. Some mail user/transport agents understand the obsolete field but do not understand the standard "Disposition-Notification-To" supplied by ***YES**.

Reply to (REPLYTO)

Specifies the email address(es) to which replies should be sent when replies should go to an address other than the From (originator) (FROM) parameter. or to multiple addresses. CHAR(128)

Single values

*NONE	Replies are directed to the address the email is from.

Other values (up to 300 repetitions)

*CURRENT	The email address stored in the directory entry associated with the user running the command is used.
*MAILTAG	The email address specified in the MAILTAG() keyword as stored in the spooled file's User Defined Data is used.
	Note: Instructions for storing an email address in the spooled file's User Defined Data can be found in: *Info Print Server User's Guide G544-5775*.
*PAGDTA	Recipient information is taken from data on each page of the spooled file. The location of the data is specified using the Page data (PAGDTA) parameter. When no program name is specified on the Address mapping program (ADDMAPPGM) parameter, the data is used as an email address. When a program name is specified on the Address mapping program (ADDMAPPGM) parameter, the data is passed to the program and the email address returned by it is used.
	All pages with identical data are grouped together and sent as a single email. Since there can be different data on various pages, *PAGDTA results in a separate email for each unique data. Pages that are not associated with any recipient information (i.e. pages outside a page group and PAGDTA(*STRPAGRP) specified) are not sent.
*SPLFOWN	The email address stored in the directory entry associated with the user that owns the spooled file is used.
*SPLFCRT	The email address stored in the directory entry associated with the user who created the spooled file is used. This can differ from the owning user if the spooled file was created on another system.
*USRDFNDTA	The email address stored in the spooled file's User Defined Data is used.
	Note: Similar to *MAILTAG but without the keyword MAILTAG().
*USRDFNTXT	The email address stored in the spooled file's User Defined Text is used.
*USRDTAUP	The spooled file's user data is treated as a user name and the email address stored in the directory entry associated with the user name is used.
*USRID	Specify the directory entry or distribution list that supplies the email address(es). The correct form is: ***USRID:NAME:ADDRESS** where **NAME** is either a directory entry's "User ID" or a distribution list's "List ID" and where **ADDRESS** is either a directory entry's "Address" or a distribution list's "List ID qualifier". The email address found on the directory entry, or the email address found on each directory entry found on the distribution list, is/are used.
*USRPRF	Specify the user profile that supplies the email address. The correct form is: ***USRPRF:NAME** where **NAME** is a user profile. The directory entry associated with the profile is located and the email address contained in the directory entry is used.
character-value	Specify the email address to which replies should be directed.

Target coded character set id (CCSID)

Specifies the ASCII coded character set identifier (CCSID) that is used to map data in outgoing mail. INT(4)

*WINANSI	The default coded character set identifier (1252).
*UNICODE	ISO/IEC 10646 Universal Coded Character Set Level 2 (13488).
*UTF8	Unicode 8 bit transfer encoding (1208).
*ISO88591	ISO-8859-1 Latin 1 Western European "8-bit ASCII" (819).
*ISO88592	ISO-8859-2 ROECE Latin 2 Eastern European (912).
*ISO88595	ISO-8859-5 Cyrillic (915).
*ISO88597	ISO-8859-7 Greek (813).
*ISO88598	ISO-8859-8 Hebrew (916).
*ISO88599	ISO-8859-9 Latin 9 other Latin-using languages (920).
*BIG5	Traditional Chinese, Taiwan Industry Standard PC Data Mixed for Big5 (950).
integer	Specify the coded character set identifier to use.

Source coded character set id (SRCCCSID)

Specifies the coded character set identifier (CCSID) used to create the spooled file. INT(4)

*KBDTYPE	The system determines the coded character set identifier value from the QKBDTYPE system value.
*SPLF	The spooled file's attributes are inspected to determine its coded character set identifier value.
*SYSVAL	The system determines the coded character set identifier value from the QCHRID system value.
*JOBDFT	The system uses the current job's default coded character set identifier.
integer	Specify the coded character set identifier to use.

Character encoding of mail (CHRENC)

Specifies the character set used to create the email and MIME headers (the transfer encoding).

*UTF8	Unicode 8 bit transfer encoding (1208).
*ISO88591	ISO-8859-1 Latin 1 Western European "8-bit ASCII" (819).
*ISO88592	ISO-8859-2 ROECE Latin 2 Eastern European (912).
*ISO88595	ISO-8859-5 Cyrillic (915).
*ISO88596	ISO-8859-6 Arabic (1089).
*ISO88597	ISO-8859-7 Greek (813).
*ISO88598	ISO-8859-8 Hebrew (916).
*ISO88599	ISO-8859-9 Latin 9 other Latin-using languages (920).
*BIG5	Traditional Chinese, Taiwan Industry Standard PC Data Mixed for Big5 (950).

Command character identifier (CMDCHRID)

Specifies the character identifier (graphic character set and code page) for the data being entered as command parameter values. The character identifier is related to the display device used to enter the command. INT(2), INT(2)

Single values

*SRCCCSID	The system determines the graphic character set and code page values for the command parameters from the source coded character set identifier specified on the command.
*SYSVAL	The system determines the graphic character set and code page values for the command parameters from the QCHRID system value.
*JOBDFTCCSID	The system determines the graphic character set and code page values for the command parameters from the job's default coded character set identifier.

Element 1: Graphic character set

integer	Specify the graphic character set.

Element 2: Code page

    integer   Specify the code page.

Page range to print (PAGERANGE)

Specifies the starting and ending pages to process.

Single values

    *SPLF   The page range specified in the spooled file's attributes is used.

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.
    integer   Specify the starting page.

Element 2: Ending page

    *END   Processing continues until the end of file.
    integer   Specify the ending page.

Page data (PAGDTA)

Specifies the location (line, position and length), on the page of the spooled file, from which data is retrieved. INT(2), INT(2), INT(2) The most accurate method for determining the data location is to print a formatted dump of a sample spooled file using our Dump Page Index Positions (DMPPIP) command.

The data is used as recipient information, either an email address or data to be mapped by the program specified on the Address mapping program (ADDMAPPGM) parameter.

Single values

    *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.

    *NONE   Page data location is not specified.

Element 1: Line

    1-255   Specify the line number where the data is located on the page.

Element 2: Position

    1-378   Specify the position where the data is located in the line. Valid values range from 1 through 378. The value specified plus the data length should be less than the number of print positions in the spooled file.

Element 3: Length

    1-255   Specify the length of the data. The value specified plus the start position should be less than the number of print positions in the spooled file.

Address mapping program (ADDMAPPGM)

Specifies the name of a customer supplied program that calculates an email address based on data from the spooled file. CHAR(10), CHAR(10)

When specified, the program is call by SpoolMail to calculate an email address based on data retrieved by the Page data parameter. The program is passed 3 parameters. The first, CHAR(256), is filled by the program with the calculated email address. The second, CHAR(256), contains the data found on the page. The third CHAR(4096), contains the spooled files attributes. See file SPOOLMAIL/SMSOURCE for more details.

Single values

*NONE   No address mapping is performed.

Element 1: Address mapping program

name   Specify the name of the program.

Qualifier 2: Library

*LIBL	All libraries in the thread'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.
name	Specify the name of the library.

Delete file after processing (DLTSPLF)

Specifies whether or not to delete the specified spooled file after it has been successfully processed. CHAR(1)

*NO	Do not delete the spooled file.
*YES	Delete the spooled file after it has been successfully processed.

> **Note:** :This value can not be used when the command is run by a Gumbo logical printer.

Include object (INCOBJ)

Specifies the path name of an additional object (stream file) to include in the generated email message. For example a stream file containing standard terms and conditions can be included as an additional attachment. A maximum of 64 path names can be specified.

For more information on specifying path names, see *Programming > Control language > CL concepts > IBM i objects > Object naming rules* topic in the IBM i Information Center at http://publib.boulder.ibm.com/eserver/ibmi.html. CHAR(5000)

Single values

*NONE   No objects are sent.

Element 1: Name

path-name   Specify an object path name.

Element 2: Send as

*ATTACH	Send the object as an attached file using MIME and specifying "application/octet-stream".
*TEXTPLAIN	Copy the object into the body of the mail message specifying content type text/plain. The CCSID of the file must match the value specified for CHRENC().

> **Note:** Some servers disregard this request and form an attachment from the message in all cases. Some servers disregard this request for the second and subsequent body parts. If this is the case, try MSG(*NONE).

*TEXTHTML	Copy the object into the body of the mail message specifying content type text/html. The CCSID of the file must match the value specified for CHRENC().

> **Note:** Some servers disregard this request and form an attachment from the message in all cases. Some servers disregard this request for the second and subsequent body parts. If this is the case, try MSG(*NONE).

*ATTACHPDF	Send the object as an attached file using MIME and specifying "application/pdf". Use this value if the attached file contains Adobe's Portable Document Format (pdf) data.
*ATTACHPS	Send the object as an attached file using MIME and specifying "application/postscript". Use this value if the attached file contains postscript data.
*NOTE	Same as *TEXTPLAIN which is preferred.

Element 3: Multipart/alternative group

*NONE   The object is not a member of a "multipart/alternative" group.

1-9	Specify a group number for forming "multipart/alternative" groups. All objects with the same group number are members of a "multipart/alternative" in the generated email.

PDF document security (PDFDOCSEC)

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

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

Element 1: Owner password CHAR(32)

*NONE	The PDF document does not have an owner password. Unlike most special values, this is case sensitive.
character-value	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 a user password. Unlike most special values, this is case sensitive.
character-value	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 from the PDF document is allowed.
*NO	Portions of 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 INT(2)

*V1	Version 1, which uses 40-bit encryption and is compatible with Acrobat Reader 4.0 or later. Value 0.
	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, which uses 128-bit encryption and is compatible with Acrobat Reader 5.0 or later. Value 16.
*V5	Version 5, which uses 256-bit Advanced Encryption Standard (AES) and is compatible with Acrobat Reader 9.0 or later. Value 32.

Element 8: Allow form fill-in and sign

*YES	Form fill-in and document signing operations are allowed.
*NO	The PDF 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) stream file. CHAR(256).

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

*NONE	No title is placed in the generated stream 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.
*USRDTA	The spooled file's user data is used as the title.
*USRDFNDTA	The spooled file's user defined data is used as the title.
*USRDFNTXT	User-defined text taken from the user profile when the spooled file was created is used as the title.
character-value	Specify the title of the PDF file.

PDF document subject (PDFDOCSBJ)

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

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

*DEFAULT	A default subject is placed in the generated stream 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.
*USRDTA	The spooled file's user data is used as the subject.
*USRDFNDTA	The spooled file's user defined data is used as the subject.
*USRDFNTXT	User-defined text taken from the user profile when the spooled file was created is used as the subject.
character-value	Specify the subject of the PDF file.

PDF document author (PDFDOCATH)

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

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

*CRTUSRPRF	The user profile that created the spooled file is the author.
*NONE	The generated file does not contain author information.
character-value	Specify the author of the PDF file.

PDF document keywords (PDFDOCKWD)

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

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

*NONE	No keywords are associated with the file.
character-value	Specify a list of keywords to associate with the file.

PDF font imbedding (PDFFNTIMB)

Specifies how fonts referenced by the spooled file are represented in the generated PDF file. Imbedding fonts improves the fidelity of the PDF at the expense of file size.

Single values

*DEFAULT	The default setting is used. To change the default setting, use the CHGSM1DFT command.
*NONE	No fonts are included in the file. All fonts are mapped to Acrobat built-ins (Courier, Times New Roman, Helvetica).
*AUTO	Fonts are included when the Adobe built-in encoding does not contain all characters used by the spooled file. Imbedding is determined on a per font basis similar to *ALL.
*ALL	All Fonts are included in the file. Unused characters are removed from the font before inclusion. **Note:** The current implementation does not remove unused characters from type 1 fonts.
*TYPES13	Both raster and outline fonts are included in the file.

Other values (up to 5 repetitions)

*TYPE1	Outline fonts are included in the file.
*TYPE3	Raster fonts are subsetted and included in the file.
*FGID	Printer resident font specifications are converted to host resident printer emulation fonts and these are included in the file.
*TRUETYPE	TrueType and OpenType fonts are included in the file.

PDF document open options (PDFDOCOPN)

Specifies how Acrobat presents the document on the screen or in print.

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

PDF documents can be configured to control the behavior of Acrobat when the document is opened or printed. The configuration settings are those found in Acrobat under File > Properties. 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.

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'.
*THUMBNAIL	Thumbnails and pages are displayed when the document is opened. Value '3'.
*FULLSCREEN	Full-screen mode is displayed, with no menu bar, window controls, or any other window visible when the document is opened. Value '4'.

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'.
*TWOCOLLEFT	Display pages in two columns, with odd-numbered pages on the left. Value '3'.
*TWOCOLRIGHT	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 is visible. Value '0'.
*YES	The viewer's menu bar is 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.
8-1600	Specify the percentage by which the page is magnified.

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.
integer	Specify the page number that is displayed when the document is opened.

Element 12: Page scaling CHAR(1)

Specifies the page scaling option to be selected when a print dialog is displayed for this document.

*DEFAULT	Use the current print scaling. Value x'00'.
*NONE	The print dialog should reflect no page scaling. Value '1'.

Element 13: Duplex CHAR(1)

Specifies the paper handling option to use when printing the file from the print dialog.

*DEFAULT	Use the current setting. Value x'00'.
*SIMPLEX	Print single-sided. Value '1'.
*SHORTEDGE	Print duplex and flip on the short edge of the sheet. Value '2'.
*LONGEDGE	Print duplex and flip on the long edge of the sheet. Value '3'.

Element 14: Pick tray by page size CHAR(1)

Specifies whether the PDF page size is used to select the input paper tray. This setting influences only the preset values used to populate the print dialog presented by a PDF viewer application.

Note: This setting has no effect on Mac OS systems, which do not provide the ability to pick the input tray by size.

*NO	Selection as defined by the PDF viewer application. Value '0'.
*YES	Check box in the print dialog associated with input paper tray is checked. Value '1'.

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 Adobe's Portable Document Format (PDF).

Single values

*NONE	The PDF document does not have a media overlay.
*GREENBAR	An overlay that emulates green bar paper is used. Bars are oriented in landscape.
*GREENBARP	An overlay that emulates green bar paper is used. Bars are oriented in portrait.
*BLUEBAR	An overlay that emulates blue bar paper is used. Bars are oriented in landscape.
*BLUEBARP	An overlay that emulates blue bar paper is used. Bars are oriented in portrait.
*COPY	The word "COPY" in large faint letters diagonally across the paper is used.

Qualifier 1: PDF media overlay

name	Specify the name of the media overlay to apply.

Qualifier 2: Library

*LIBL	All libraries in the thread'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.
name	Specify the name of the library.

## 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 Adobe's Portable Document Format (PDF).

*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.
*NONE	No bookmarks are generated.

*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 is listed within it. For example, if bookmark "SalesRepId" "C775" appears on same pages (254, 321, 467) as "InvoiceNumber" "1009", "1023" and "1102" the follow is generated:

```
└──SALESREPID
   └──C775
      └──INVOICENUMBER
      │   ├──1009
      │   ├──1023
      │   └──1102
      └──PAGE
          ├──254
          ├──321
          └──467
```
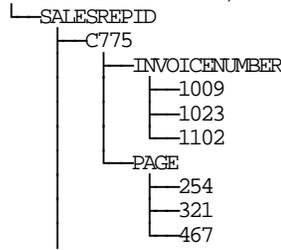
PDF bookmark data source (PDFBKMSRC)

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

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

Element 1: Line

*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.

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.

1-255   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.

Element 2: Position

1-378   Specify the position where the data is located in the line. Valid values range from 1 through 378. The value specified plus the data length should be less than the number of print positions in the spooled file.

Element 3: Length

    1-255   Specify the length of the data. The value specified plus the start position should be less than the number of print positions in the spooled file.

Element 4: Name

    character-value   Specify the bookmark name.

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.

Signing key (SGNKEY)

Specifies the digital certificate used to sign the email.

The signature included with the email allows the recipient to validate the identity of the sender and provides additional assurance that the email has not been tampered with after it is signed.

A certificate is referenced by specifying the name (Application ID) of an **object signing** application created using IBM i's Digital Certificate Manager.

    *DEFAULT   The certificate previously entered using the CHGSM1DFT command is used.
    *NONE   No signing operation is performed.
    application-id   Specify the application identifier to use in the signing operation.

PDF document signing key (PDFSGNKEY)

Specifies the digital certificate used to sign Portable Document Format (PDF) files.

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

The PDF documents produced can be, optionally, digitally signed. The signature included in the PDF document allows the identity of the author to be validated and provides additional assurance that the PDF document has not been tampered with after it was signed.

A certificate is referenced by specifying the name (Application ID) of an **object signing** application created using IBM i's Digital Certificate Manager.

    *DEFAULT   The certificate previously entered using the CHGSM1DFT command is used.
    *NONE   No signing operation is performed.
    application-id   Specify the application identifier to use in the signing operation.

Style sheet (HTMCSS)

Specifies the cascading style sheet applied to styled html.

The contents of the stream file are copied, unaltered and uninspected, into the generated html. The contents are placed within a <style></style> tag pair in the head section of the document.

Note: This parameter is ignored for transforms except those that generate styled html.

*DEFAULT	The following style sheet is used:

```
body { background-color: #f7f7f7; }
pre {
 background-color: #ffffff;
 border: 1px solid #f1f1f1;
 line-height: 92%;
 border-radius: .05em;
 box-shadow: 3px 3px 2px #d3d3d3;
 padding: .3em .3em .3em .3em;
}
tr { float: left; }
@media print { tr { float: none; page-break-after: always;} }
```

path-name	Specify the stream file to use.

Priority (PRIORITY)

Specifies the priority of the message. Depending on the value specified, X-Priority and/or importance MIME fields are included in the message headers. INT(2)

*NONE	X-Priority and/or importance are not included in the message.
*HIGHEST	X-Priority 1, emulating Thunderbird.
*HIGH	X-Priority 2, emulating Thunderbird.
*NORMAL	X-Priority 3, emulating Thunderbird.
*LOW	X-Priority 4, emulating Thunderbird.
*LOWEST	X-Priority 5, emulating Thunderbird.
*HIGHO	X-Priority 1, importance high, emulating Outlook.
*NORMALO	X-Priority 3, importance normal, emulating Outlook.
*LOWO	X-Priority 5, importance low, emulating Outlook.

Job system name (JOBSYSNAME)

Specifies the system where the job that created the spooled file (JOB parameter) ran. This parameter is considered after the job name, user name, job number, spooled file name, and spooled file number parameter requirements have been met.

*ONLY	There is one spooled file with the specified job name, user name, job number, spooled file name, spooled file number, and spooled file create date and time.
*CURRENT	The spooled file created on the current system with the specified job name, user name, job number, spooled file name, spooled file number, and create date and time is used.
*ANY	The job system name is not used to determine which spooled file is used. Use this value when the spooled file create date and time parameter is to take precedence over the job system name when selecting a spooled file.
name	Specify the name of the system where the job that created the spooled file ran.

Spooled file created (CRTDATE)

Specifies the date and time the spooled file was created. This parameter is considered after the job name, user name, job number, spooled file name, spooled file number, and job system name parameter requirements have been met.

Single values

*ONLY	There is one spooled file with the specified job name, user name, job number, spooled file name, spooled file number, and job system name.
*LAST	The spooled file with the latest create date and time of the specified job name, user name, job number, spooled file name, spooled file number, and job system name is used.

Element 1: Creation date

date	Specify the date the spooled file was created.

Element 2: Creation time

<u>*ONLY</u>	There is one spooled file with the specified job name, user name, job number, spooled file name, spooled file number, job system name, and spooled file create date.
*LAST	The spooled file with the latest create time of the specified job name, user name, job number, spooled file name, spooled file number, job system name, and spooled file create date is used.
time	Specify the time the spooled file was created.

Obsolete (Originator) (USRID)

Note: This parameter is obsolete, use the From (originator) (FROM) parameter instead. This parameter remains on the command to protect the upward compatibility of customer programs that used it. If this parameter is specified and the From (originator) (FROM) parameter is not specified, the entered value overrides the default value of the From (originator) (FROM) parameter.

Specifies the network user that originated the email. CHAR(8), CHAR(8)

Examples

Example 1:
```
SNDSPLMAIL  FILE(QSYSPRT) TOSMTPNAME(*PAGDTA)
            TRANSFORM(*PDFLETTER) PAGDTA(*STRPAGGRP)
            JOB(033194/QPGMR/MONTHEND) SPLNBR(2)
            PDFBKMSRC((5 10 8 Invoice))
```

This command processes spooled file number 2, QSYSPRT from job 033194/QPGMR/MONTHEND. The spooled file is split into separate sections based on the DDS STRPAGGRP/ENDPAGGRP keywords and the sections are each converted to PDF and sent the email address specified on the STRPAGGRP keyword. The spooled file contains invoice numbers printed on line 5, position 10 for a length of 8. These are used to book mark the file for quick access to individual pages.

Example 2:
```
SNDSPLMAIL  FILE(QSYSPRT)
            TOSMTPNAME(john_smith@widget.com)
            SEND(*TEXTPLAIN) MSG(*NONE)
```

This command sends the last spooled file with name QSYSPRT from the job the job running the command. The spooled file is sent to john_smith@widget.com. The spooled file is sent in the body of the email.

Error messages

Parameter dependencies

SM17001	When network user id *GATEWAY is specified an email address must be specified.
SM17002	A network user id or a To (recipient) can be specified, but not both.
SM17003	When To (recipient) *NONE is specified network user id *GATEWAY cannot be specified.
SM17006	At least one recipient is required.
SM17007	When recipient *PAGDTA is specified, parameter PAGDTA() must be specified.
SM17009	An address mapping program is only allowed when the recipient is *PAGDTA.
SM17010	When subject *PAGDTA is specified, parameter PAGDTA() must be specified.
SM17011	When subject *PAGDTA is specified, parameter TOSMTPNAME(*PAGDTA) must be specified.
SM17005	When USRID() is specified FROM() cannot be specified.
SM17004	When send as *TEXTPLAIN is specified transform *TXT or *TXTTRIM must be specified.
SAMD002	When transform *WSCST is specified a Workstation customizing object must be specified.
SAMD003	A transform or a workstation customizing object name can be specified, but not both.
SAMD004	When Workstation customizing object *NONE is specified transform *WSCST cannot be specified.
PDFD001	PDF document security can only be specified with a *PDFxxx transform.

SAMD005   When a style sheet is specified, transform *HTMCSS must be specified.

Verify Local SMTP (VFYLOCAL)

Where allowed to run: All environments (*ALL)
Threadsafe: No

The Verify Local SMTP (VFYLOCAL) command verifies or sets up SMTP on the local system.

Details of the verification process are printed with the job's spooled output in file SMLOG.

Parameters

Keyword	Description	Choices	Notes
SETUP	Make changes to system	**<u>*NO</u>**, *YES, Y, N	Optional, Positional 1

Make changes to system (SETUP)

Specifies the whether the command makes changes to the system.

<u>*NO</u>   The command does not make changes to the local system.
***YES**   The command makes changes to the local system.

Examples

Example 1:
```
VFYLOCAL    SETUP(*NO)
```

This command verifies that SMTP is set up correctly on the local system.

Example 2:
```
VFYLOCAL    SETUP(*YES)
```

This command sets up SMTP on the local system.

Error messages

*ESCAPE messages

    MSU5037   SMTP verification/set up failed

Verify Mailhub Server (VFYMAILHUB)

Where allowed to run: All environments (*ALL)
Threadsafe: No

The Verify Mailhub Server (VFYMAILHUB) command verifies or sets up a forwarding mailhub server for use by the local system.

Details of the verification process are printed with the job's spooled output in file SMLOG.

The command is intended for initial configuration of a system. If a mailhub server and/or host logon information for it have previously been configured, this command cannot be used to modify the system. You can remove a previously configured forwarding mail hub server by running:

```
CHGSMTPA    FWDHUBSVR(*NONE)
```

You can remove previously configured host logon information by running:

```
RMVSMTPLE TYPE(*HOSTAUTH) HOSTNAME('configured_host_name')
```

Parameters

Keyword	Description	Choices	Notes
RMTSYS	Remote system	*Character value*, ***MAILHUB**, *INTNETADR	Optional
INTNETADR	Remote internet address	*Character value*, ***RMTSYS**, *MAILHUB	Optional
AUTHUSRNAM	Authentication username	*Character value*, ***NONE**	Optional
AUTHPWD	Authentication password	*Character value*	Optional
SETUP	Make changes to system	*YES, ***NO**, Y, N	Optional

Remote system (RMTSYS)

Specifies the remote system name of the host with which the Verify Mailhub Server operation takes place. To be successful, the name must be valid, and the remote system must be able to communicate with the local system.

*MAILHUB	The name of the configured SMTP forwarding mailhub server is used.
*INTNETADR	The INTNETADR parameter is used.
character-value	Specify the remote system name to use.

Remote internet address (INTNETADR)

Specifies the remote internet address. The internet address is specified in the form **nnn.nnn.nnn.nnn**, where **nnn** is a decimal number ranging from 0 through 255. An internet address is not valid if it has a value of all binary ones or all binary zeros for the network identifier (ID) portion or the host ID portion of the address. If the internet address is entered from a command line, enclose the address in apostrophes.

*RMTSYS	The internet address of the specified remote system is used.
*MAILHUB	The internet address of the configured SMTP forwarding mailhub server is used.
character-value	Specify the internet address to use.

Authentication username (AUTHUSRNAM)

Specifies the user name used to authenticate with the remote system. CHAR(80)

Valid characters are case sensitive and include all alpha-numeric characters (a-z, A-Z, and 0-9), and the following special characters: characters: **.,!#$%&*+-/:;=@?_~^**.

*NONE	Authentication is not performed.

character-value Specify the user name to send to the remote system for authentication.

Authentication password (AUTHPWD)

Specifies the password used to authenticate with the remote system. CHAR(128)

Valid characters are case sensitive and include all alpha-numeric characters (a-z, A-Z, and 0-9), and the following special characters: characters: **.,!#$%&*+-/:;=@?_~^**.

character-value Specify the password to send to the remote system for authentication.

Make changes to system (SETUP)

Specifies the whether the command makes changes to the system.

*NO   The command does not make changes to the local system.
*YES   The command makes changes to the local system.

Examples

Example 1:
```
VFYMAILHUB  RMTSYS(*MAILHUB) SETUP(*NO)
```

Command verifies that the currently configured forwarding mailhub server is set up and operating correctly.

Example 2:
```
VFYMAILHUB  RMTSYS(sys1.widget.com)
            INTNETADR(192.168.1.2) SETUP(*YES)
```

This command sets up sys1.widget.com at address 192.168.1.2 as the forwarding mailhub server for this IBM i.

Error messages

Parameter dependencies
MSU7011   RMTSYS(*INTNETADR) and INTNETADR(*RMTSYS) are mutually exclusive.

*ESCAPE messages
MSU5165   Mailhub server verification/set up failed

Verify Mail Router (VFYROUTER)

Where allowed to run: All environments (*ALL)
Threadsafe: No

Note: THIS COMMAND HAS BEEN SUPERCEDED AND WILL BE REMOVED IN A FUTURE RELEASE. Use Verify Mailhub Server (VFYMAILHUB) instead.

The Verify Mail Router (VFYROUTER) command verifies or sets up a remote mail router for use by the local system.

Note: If a mail router has previously been configured, this command cannot be used to change it.

Details of the verification process are printed with the job's spooled output in file SMLOG.

Parameters

Keyword	Description	Choices	Notes
RMTSYS	Remote system	*Character value*, ***ROUTER**, *INTNETADR	Optional, Positional 1
INTNETADR	Remote internet address	*Character value*, ***RMTSYS**, *ROUTER	Optional, Positional 2
SETUP	Make changes to system	*YES, ***NO**, Y, N	Optional, Positional 3

Remote system (RMTSYS)

Specifies the remote system name of the host with which the Verify Mail Router operation takes place. To be successful, the name must be valid, and the remote system must be able to communicate with the local system.

*ROUTER	The name of the configured SMTP mail router is used.
*INTNETADR	The INTNETADR parameter is used.
character-value	Specify the remote system name to use.

Remote internet address (INTNETADR)

Specifies the remote internet address. The internet address is specified in the form **nnn.nnn.nnn.nnn**, where **nnn** is a decimal number ranging from 0 through 255. An internet address is not valid if it has a value of all binary ones or all binary zeros for the network identifier (ID) portion or the host ID portion of the address. If the internet address is entered from a command line, enclose the address in apostrophes.

*RMTSYS	The internet address of the specified remote system is used.
*ROUTER	The internet address of the configured SMTP mail router is used.
character-value	Specify the internet address to use.

Make changes to system (SETUP)

Specifies the whether the command makes changes to the system.

*NO	The command does not make changes to the local system.
*YES	The command makes changes to the local system.

Examples

Example 1:
```
VFYROUTER   RMTSYS(*ROUTER) SETUP(*NO)
```

Command verifies that the currently configured mail router is set up and operating correctly.

Example 2:
```
VFYROUTER   RMTSYS(sys1.widget.com)
            INTNETADR(192.168.1.2) SETUP(*YES)
```

This command sets up sys1.widget.com at address 192.168.1.2 as the mail router for this IBM i.

Error messages

Parameter dependencies

MSU7011   RMTSYS(*INTNETADR) and INTNETADR(*RMTSYS) are mutually exclusive.

*ESCAPE messages

MSU5139   Mail router verification/set up failed

Work with Gumbo Output Queue (WRKGSIOUTQ)

Where allowed to run: All environments (*ALL)
Threadsafe: No

The Work with Gumbo Output Queue (WRKGSIOUTQ) command works like IBM i's Work with Output Queue (WRKOUTQ) command but provides additional options to access the functions of SpoolMail.

Parameters

Keyword	Description	Choices	Notes
OUTQ	Output queue	*Qualified object name*	Required, Positional 1
	Qualifier 1: Output queue	*Name*	
	Qualifier 2: Library	*Name*, ***LIBL**, *CURLIB	
OUTPUT	Output	*****, *PRINT	Optional, Positional 2

Output queue (OUTQ)

Specifies the Output queue and the library where it resides.

This is a required parameter.

Qualifier 1: Output queue

name   Specify the name of the output queue.

Qualifier 2: Library

*LIBL   All libraries in the thread'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.
name   Specify the name of the library.

Output (OUTPUT)

Specifies where the output from the command is sent. CHAR(10)

*   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

Example 1:
```
WRKGSIOUTQ  OUTQ(PRT01)
```

This command allows you to work with all of the spooled files on the PRT01 output queue.

Example 2:
```
WRKGSIOUTQ  OUTQ(QGPL/QPRINT)
```

This command allows you to work with all of the spooled files on the QPRINT output queue in library QGPL.

Error messages

*ESCAPE messages

SUI3002   Command processing failure.

Work with Gumbo Spooled Files (WRKGSISPLF)

Where allowed to run: All environments (*ALL)
Threadsafe: No

The Work with Gumbo Spooled Files (WRKGSISPLF) command works like IBM i's Work with Spooled Files (WRKSPLF) command but provides additional options to access the functions of SpoolMail.

Parameters

Keyword	Description	Choices	Notes
SELECT	Select files for	*Element list*	Optional, Positional 1
	Element 1: User	*Generic name, name*, ***CURRENT**, *ALL	
	Element 2: Print device	*Name*, ***ALL**, *OUTQ	
	Element 3: Form type	*Character value*, ***ALL**, *STD	
	Element 4: User data	*Character value*, ***ALL**	
	Element 5: ASP	1-32, ***ALL**	
	Element 6: Spooled file	*Generic name, name*, ***ALL**	
OUTPUT	Output	*****, *PRINT	Optional, Positional 2
JOB	Job name	Single values: ***ALL**	Optional
		Other values: *Qualified job name*	
	Qualifier 1: Job name	*Generic name, name*	
	Qualifier 2: User	*Generic name, name*, ***ALL**	
	Qualifier 3: Number	000000-999999, ***ALL**	
PERIOD	Time period	*Element list*	Optional
	Element 1: Starting date and time	*Element list*	
	Element 1: Starting time	*Time*, ***AVAIL**	
	Element 2: Starting date	*Date*, ***BEGIN**	
	Element 2: Ending date and time	*Element list*	
	Element 1: Ending time	*Time*, ***AVAIL**	
	Element 2: Ending date	*Date*, ***END**	

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.

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.
generic-name	Files created by all users that meet the criteria are selected. A generic name is a character string that contains one or more characters followed by an asterisk (*); for example, ABC*. The asterisk substitutes for any valid characters. If an asterisk is not specified with the name, the system assumes that the name is a complete user name.
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.
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.
character-value   Specify the form type to select the file.

Element 4: User data

*ALL   All spooled files are selected regardless of their user data.
generic-user-data Files with a user data tag that matches the criteria are selected. A generic user data tag is a character string that contains one or more characters and ends with an asterisk (*); for example, ABC*. The asterisk substitutes for any valid characters. If an asterisk is embedded in the middle of the string, for example 'AB*C*', it will be treated as part of the comparison string.
character-value   Specify the user data to select the file.

Element 5: ASP

*ALL   All spooled files are selected regardless of ASP.
1-32   Specify the auxiliary storage pool (ASP) of the of the files being selected.

Element 5: Spooled file

*ALL   Files with any name are selected. of ASP.
generic-name   All spooled files with a name that matches the generic name are selected. A generic name is a character string that contains one or more characters followed by an asterisk (*); for example, ABC*. The asterisk substitutes for any valid characters. If an asterisk is not specified with the name, the system assumes that the name is a complete spooled file name.
name   Specify the name of the spooled files to select.

Output (OUTPUT)

Specifies where the output from the command is sent. CHAR(10)

*   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.

Job name (JOB)

Specifies the name of the job or jobs that created the spooled files to be selected.

Note: This parameter is allowed only if *ALL is specified for the user name element of the SELECT parameter.

Single values

*ALL   All jobs are included.

Qualifier 1: Job name

generic-name   Jobs with the generic name specified are to be included. A generic name is a character string of one or more characters followed by an asterisk (*); for example, ABC*. The asterisk substitutes for any valid characters. A generic job name specifies all jobs with job names that begin with the generic prefix.
name   Specify the name of the job. CHAR(10)

Qualifier 2: User

*ALL   All jobs that match the specified job name are included.
generic-name   All jobs that match the specified job name are included.
name   Specify the name that identifies the user profile under which the job is run. CHAR(10)

Qualifier 3: Number

*ALL   All jobs that match the specified job name and user name are to be included.
000000-999999   Specify the system assigned job number. CHAR(6)

Time period (PERIOD)

Specifies the period of time for selecting which spooled files are shown. This is the creation date and time of the spooled files. This parameter contains two element lists of two elements each.

Element 1: Starting date and time

Element 1: Starting time   One of the following specifies the starting time from which entries are shown. Entries created before this time on the **Starting date** are not shown.

*AVAIL	All data that is available for the specified date is shown.
time	Specify the start time from which data for the specified date is shown. The time is specified in 24-hour format and can be specified with or without a time separator:

- Without a time separator, specify a string of 4 or 6 digits (hhmm or hhmmss) where hh = hours, mm = minutes, and ss = seconds.
- With a time separator, specify a string of 5 or 8 digits where the time separator specified for your job is used to separate the hours, minutes, and seconds. If you enter this command from the command line, the string must be enclosed in apostrophes. If a time separator other than the separator specified for your job is used, this command will fail.

Element 2: Starting date   One of the following specifies the starting date from which entries are shown. Entries created before this date are not shown.

*BEGIN	The data from the beginning of the log is shown.
date	Specify the start date from which data is shown. The date must be specified in the job date format.

Element 2: Ending date and time

Element 1: Ending time   One of the following specifies the ending time to which entries are shown. Entries created after this time on the **Ending date** are not shown.

*AVAIL	All data that is available for the specified date is shown.
time	Specify the end time to which data for the specified date is shown. The time is specified in 24-hour format and can be specified with or without a time separator:

- Without a time separator, specify a string of 4 or 6 digits (hhmm or hhmmss) where hh = hours, mm = minutes, and ss = seconds.
- With a time separator, specify a string of 5 or 8 digits where the time separator specified for your job is used to separate the hours, minutes, and seconds. If you enter this command from the command line, the string must be enclosed in apostrophes. If a time separator other than the separator specified for your job is used, this command will fail.

Element 2: Ending date   One of the following specifies the ending date to which entries are shown. Entries created after this date are not shown.

*END	The data to the end of the log is shown.
date	Specify the end date to which data is shown. The date must be specified in the job date format.

Examples

Example 1:
```
WRKGSISPLF   SELECT(*ALL *ALL *ALL *ALL)
```

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

Example 2:
```
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.

Error messages

*ESCAPE messages

SUI3002	Command processing failure.
GSID001	JOB parameter conflicts with SELECT parameter.

Chapter 8 Trouble-Shooting

What's In This Chapter

This chapter provides information and procedures useful for correcting or reporting SpoolMail problems. The chapter:

- Describes general trouble-shooting.
- Describes software installation problems.
- Describes general mail delivery problems.
- Describes MSF specific delivery problems.
- Describes SMTP specific delivery problems.
- Describes PDF file problems.
- Describes Gumbo Logical Printer problems.
- Describes RTF file problems.
- Describes how to create a spool save file.
- Describes how to email a spool save file.

General Trouble-Shooting

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

- Check the detailed messages in your job log:
    1. Run the DSPJOBLOG command.
    2. Press F10 to display detailed messages.
    3. Locate the messages related to the error.
    4. Place your cursor on each message in turn and press F1.
    5. Take any corrective actions suggested by the messages.
- Download the current cumulative PTF package from www.gumbo.com.
- Check the bottom of the PTF page at www.gumbo.com for IBM PTFs that may be required.
- 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 section describes problems, causes, and solutions specific to software installation.

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

Symptom	During installation inquiry message id CPA3DE4 "Directory not registered. (C G)" is issued.
Cause	IBM i has lost the relationship between the product and the directory and hence the message.
Solution	You can safely take a "G" to this message. You will receive the message three or four times.

- 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.

- 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 stable consistent state by completely removing the product then re-installing it by performing the following:

1. Check the system library list by running:
   ```
   DSPSYSVAL SYSVAL(QSYSLIBL)
   ```

   Note: If SPOOLMAIL is present, remove it with WRKSYSVAL and IPL the system.

2. Delete the licensed program by running:
   ```
   DLTLICPGM  LICPGM(2A55SM1) RLS(*ALL) OPTION(*ALL)
   ```

   Note: It is okay if this fails with diagnostic CPD3D91 "Product 2A55SM1 option *ALL release *ALL not installed."

3. Delete the product's library by running:
   ```
   DLTLIB  LIB(SPOOLMAIL)
   ```

   Note: It is okay if this fails with escape CPF2110 "Library SPOOLMAIL not found."

4. Delete the product's directories by running:
   ```
   RMVDIR  DIR('/Gumbo/ProdData/2A55SM1') SUBTREE(*ALL) RMVLNK(*YES)
   ```

   Note: It is okay if this fails with escape CPFA0A9 "Object not found. ...".

   If there are no other **GUMBO** products installed:

   ```
   RMVDIR  DIR('/Gumbo/ProdData')
   RMVDIR  DIR('/Gumbo')
   ```

   Note: It is okay if these fail with escape CPFA0A9 "Object not found. ...".

5. Rebuild IBM i's internal licensed program information by running:
   ```
   CALL  PGM(QSYS/QSZRECOV)
   ```

   Note: This takes several minutes depending on machine size.

6. Install the product according to the instructions in the Installation chapter.
7. Enter your authorization code.

General Mail Delivery Problems

This section describes common problems, causes, and solutions for general mail delivery problems. They are listed roughly in the order in which you should proceed. During general mail delivery trouble shooting you should send tests to yourself. Once this works properly, you can move on.

The bulk of the entries in this section are derived from trouble shooting performed by or with customers and in some sense presume that you have an "average" installation. The "average" installation is IBM i connected to a LAN with the post office (a.k.a. mailhub) on a LAN attached PC running Exchange or Domino, with a connection to the internet at large. At the "average" installation this is the first application to generate email from IBM i. Some of the entries in this section may not apply to your situation.

- System Mailhub Configuration Is Unknown

Symptom	The name of the configured mailhub is unknown.
Cause	You did not originally configure the system for email delivery.
Solution	Prompt the CHGSMTPA command and inspect the Forwarding mailhub server (FWDHUBSVR) parameter. If the value is *NONE, a mailhub is not configured. Otherwise, the name of the mailhub is shown.

- Source Of Problem Is Unknown

Symptom	The send operation runs to completion but no mail arrives.
Cause	The problem may be with the mailhub or with IBM i, but the source is unknown.
Solution	Run PINGMAIL to generate a test message to your email address and directly deliver it to the mailhub by passing IBM i's mail machinery entirely:

Note: Substitute the name of your mailhub for the value "mailhub_server" and substitute your email address for the value "you@domain.com" in the following command.

```
PINGMAIL RMTSYS(mailhub_server) SMTPNAME(you@domain.com)
```

If you receive the test message, the mailhub is working correctly and an IBM i issue is indicated. In particular, if the rest of the entries in this section do not correct the problem, you may have a DNS issue.

If you do not receive the test message then there is a problem with the mailhub. You may be able to get an indication of the problem by reviewing the SMTP conversation, which appears in your joblog. Run DSPJOBLOG, press F10 and page back for details.

- IBM i Servers Are Down

Symptom	The send operation runs to completion but no mail arrives.
Cause	The IBM i servers responsible for mail delivery may be down, particularly if IBM i has been IPLed.
Solution	Rerun VFYLOCAL to verify that all local servers are up and running: VFYLOCAL SETUP(*NO)

If local verification fails, run:

```
VFYLOCAL SETUP(*YES)
```

- Mailhub Is Not Processing Mail

Symptom	The send operation runs to completion but no mail arrives.
Cause	The mailhub responsible for mail delivery may be down, or not accepting mail from IBM i.
Solution	Rerun VFYMAILHUB to verify that the mailhub is up and running: VFYMAILHUB SETUP(*NO)

If mailhub verification fails, run:

```
VFYMAILHUB SETUP(*YES)
```

- Mailhub Refuses Mail with "Funny" Originator Address

Symptom	The send operation runs to completion but no mail arrives. Or mail arrives for some users but not all users, for example for all but AOL accounts.
Cause	An email address is not assigned to your directory entry and the mailhub does not like the "funny" address IBM i generates for the originator's address.

Solution   Assign your email address to your system distribution directory entry: (assume for this example that your "User ID and Address" are "BILLG S1234567" and you "real" email address is "billg@acme.com")

```
CHGDIRE USRID(BILLG S1234567)
        MSFSRVLVL(*SYSMS) PREFADR(*SMTP)
        USRDFNFLD((SMTPAUSRID SMTP 'billg')
                  (SMTPDMN SMTP 'acme.com'))
```

Note: If you are a local Domino for IBM i user substitute MSFSRVLVL(*DOMINO) for MSFSRVLVL(*SYSMS).

- SMTP Servers Require Reinitialization

Symptom   The send operation runs to completion but no mail arrives.
Cause   IBM i's SMTP servers may need to reinitialize. This is undocumented but our experience and discussions with IBM i's SMTP architect confirm this.
Solution   Reinitialize IBM i's SMTP servers:
```
INZLOCAL SMTP(*YES) SMTPPURGE(*NO) MSF(*NO) MSFPURGE(*NO)
```

- SMTP Servers Are Clogged With Junk

Symptom   The send operation runs to completion but no mail arrives.
Cause   IBM i's SMTP server may contain dead letters or other junk that it cannot deliver. This can be the result of previous attempts to set up mail on the system.
Solution   Clean out IBM i's SMTP server:

Note: Only perform this procedure if you are sure there is no valid deliverable mail in the SMTP server.

Note: This procedure should be required at most once per system during initial set up.

```
INZLOCAL SMTP(*YES) SMTPPURGE(*YES) MSF(*YES) MSFPURGE(*YES)
```

- Mail Server Framework Is Reporting Errors

Symptom   The send operation runs to completion but no mail arrives.
Cause   IBM i's Mail Server Framework jobs may be unable to process mail and are reporting errors.
Solution   Review job logs for the Mail Server Framework jobs:
  1. Work with active jobs by running the following command:
     ```
     WRKACTJOB
     ```
  2. Page down to the QSYSWRK subsystem.
  3. Locate the job or jobs with the name QMSF and repeat the following steps for each job.
  4. Display the job by using option 5 and pressing enter.
  5. Display the job log by selecting option 10 and pressing enter.
  6. Display detailed messages by pressing F10.
  7. You should see a job started (CPF1124) and job submitted (CPI1125) message. If there are no other messages, the Mail Server Framework is not reporting errors. (End of procedure).
  8. Display detailed information for each additional message by placing your cursor on the message and pressing F1.
  9. Take any corrective action specified in the messages.
  10. See the MSF Specific Delivery Problems section of this chapter.

- Mail Server Framework Is Ending Abnormally

Symptom   The send operation runs to completion but no mail arrives.
Cause   IBM i's Mail Server Framework jobs may be unable to process mail and are ending abnormally.

Solution Review job logs for the Mail Server Framework jobs:
1. Locate job logs for Mail Server Framework jobs that have ended by running the following command:
   `WRKSPLF SELECT(QMSF)`

   If there are no spooled output files, the Mail Server Framework is not ending abnormally (end of procedure).

2. Page down to the end of the list of spooled files.
3. Display the date and time of the spooled files by pressing F11. If there are no recent spooled files, the Mail Server Framework is not ending abnormally (end of procedure).
4. For each recent job log repeat the following steps:
5. Display the job log by using option 5 and pressing enter.
6. Review the job log for diagnostic and escape messages.
7. Take any corrective action specified in the messages.
8. See the MSF Specific Delivery Problems section of this chapter.

- SMTP Servers Are Reporting Errors

Symptom The send operation runs to completion but no mail arrives.
Cause IBM i's SMTP server jobs may be unable to process mail and are reporting errors.
Solution Review job logs for the SMTP server jobs:
1. Work with active jobs by running the following command:
   `WRKACTJOB`
2. Page down to the QSYSWRK subsystem.
3. Locate the 4 SMTP server jobs with names that start with QTSMTP*. Repeat the following steps for each job.
4. Display the job by using option 5 and pressing enter.
5. Display the job log by selecting option 10 and pressing enter.
6. Display detailed messages by pressing F10.
7. You should see a job started (CPF1124) and job submitted (CPI1125) message. If there are no other messages, the Mail Server Framework is not reporting errors. (End of procedure).
8. Display detailed information for each additional message by placing your cursor on the message and pressing F1.
9. Take any corrective action specified in the messages.
10. See the SMTP Problems section of this chapter.

- SMTP Servers Are Ending Abnormally

Symptom The send operation runs to completion but no mail arrives.
Cause IBM i's SMTP server jobs may be unable to process mail and are ending abnormally.
Solution Review job logs for the SMTP server jobs:
1. Locate job logs for SMTP server jobs that have ended by running the following command:
   `WRKSPLF SELECT(QTCP)`

   If there are no spooled output files, the SMTP server jobs are not ending abnormally (end of procedure).

2. Page down to the end of the list of spooled files.
3. Display the date and time of the spooled files by pressing F11. If there are no recent spooled files, the SMTP server jobs are not ending abnormally (end of procedure).
4. For each recent job log repeat the following steps:
5. Display the job log by using option 5 and pressing enter.
6. Review the job log for diagnostic and escape messages.
7. Take any corrective action specified in the messages.
8. See the SMTP Problems section of this chapter.

MSF Specific Delivery Problems

This section describes problems, causes, and solutions specific to IBM i's Mail Server Framework.

- MSF Job Log Contains QTCPTMM/ATTABOX Messages

Symptom	A QMSF job is complaining about a directory such as QTCPTMM/ATTABOX.
Cause	IBM i's MSF jobs depend on specific directories in the Integrated File System which are added by installing the TCP/IP Utilities and may have been deleted.
Solution	Check the existence of the TCP/IP related directories an reinstall them if they are missing by:

1. Run the WRKLNK command and locate the QTCPTMM directory.
2. Display QTCPTMM's contents using option 5.
3. Verify that subdirectories ATTABOX, ENCODE, MAIL, SMTPBOX and TMP exist.
4. If directories are missing continue with this procedure otherwise end of procedure.
5. Use the DLTLICPGM command to remove the TCP/IP Utilities.
6. Use the RSTLICPGM command to reinstall the TCP/IP Utilities.

- MSF Job Log Contains "System storage threshold exceeded" Message

Symptom	A QMSF job complains that "System storage threshold exceeded".
Cause	IBM i's MSF jobs stop processing mail when amount of disk space used rises above a set percentage. IBM i ships with this value set to 90%.
Solution	Either free disk space by deleting unused items or bump the threshold value with this procedure:

1. Run the STRSST command and select option 3 Work with disk units.
2. Select option 2 Work with disk configuration.
3. Select option 3 Work with ASP threshold.
4. Use 1=Select for the appropriate ASP (usually ASP 1).
5. Press F1=Help to review help for the Change Storage Threshold display.
6. Change the ASP threshold to 95% or a comfortable value for your installation.

SMTP Specific Delivery Problems

This section describes problems, causes, and solutions specific to IBM i's SMTP servers.

- SMTP Retries Set To Zero

Symptom	The send operation runs to completion but no mail arrives, or mail arrives for a while then stops until the next IPL.
Cause	The mailhub is periodically slow or unavailable and IBM i's SMTP attributes for retries are set too low or set to zero.
Solution	Increase the retry values to give the mailhub more chances at fielding the incoming mail:

1. Prompt the CHGSMTPA command.
2. Increase the number of retries for the retries by minute parameter.
3. Increase the number of retries for the retries by day parameter.
4. Press enter.

- Multiple Garbled Email Messages Arrive

Symptom	Multiple messages arrive for a send operation and the messages are garbled.
Cause	IBM i's SMTP is splitting the messages.
Solution	Turn off message splitting entirely by changing the POP attributes: `CHGPOPA     MSGSPLIT(*NOMAX)`

- Time On Mail Is Incorrect

Symptom	Mail delivers but contains the wrong time.
Cause	IBM i's QTIMZON system value is not set.
Solution	See Manual Mail Set Up Steps section of the Set Up chapter for instructions to correct this value. For related information see the *System management > Time management* topic in the IBM i Information Center at http://publib.boulder.ibm.com/eserver/ibmi.html.

PDF File Problems

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

- 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 SpoolMail using the CHGSM1DFT command.

- 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 smoothes 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.

- 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".

- Unable to edit PDF document with Adobe's Acrobat

Symptom	When attempting to Tools > TouchUp 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.

- Text Is Reduced and Does Not Fill Page

Symptom	When viewing the document, the text is small and does not use the entire page.
Cause	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).
Solution	Correct the printer file's page size parameter to accurately reflect the intended page size using the CHGPRTF command.

- 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 CHGSM1DFT command to specify the printer that correctly prints the spooled file.

- 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 CHGSM1DFT command from *NO (the default value) to *YES or from *YES to *NO.

- 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 can not determine the printer's no print border from its logical description. Examples of when this situation occurs: o Some *SCS printers o Some *IPDS printers with AFP(*NO) o Ascii printers with custom WSCST specified
Solution	Enter the printer's no print border values in the Refprtdev offset default (REFOFFSET) parameter of the CHGSM1DFT command.

- 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: o Some *IPDS printers with AFP(*YES) and no print borders. o Ascii printers with actual values different from values found in WSCST or MFRTYPMDL parameter
Solution	Enter the no print border value discrepancy in the Refprtdev offset correction (REFCORRECT) parameter of the CHGSM1DFT command.

Gumbo Logical Printer Problems

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

- 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.

- Printer Generates Inquiry Messages

Symptom	A Gumbo Logical Printer is working correctly but generates operator intervention inquiry messages such as "Load form type *STD" while processing spooled files.
Cause	The printer was started with "Message option" *INQMSG which is the start on the STRPRTWTR command.
Solution	End and restart the writer specifying "Message option" *NOMSG.

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

1. End the writer.
   ```
   ENDWTR WTR(GLP01)
   ```
2. Restart the writer specifying *NOMSG.
   ```
   STRPRTWTR DEV(GLP01) FORMTYPE(*ALL *NOMSG)
   ```

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

RTF File Problems

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

- 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 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).
Solution	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* development system can be produced using the Create Spool Save File (CRTSPLSAVF) command. To create a spool save file:

- 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.
- 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.
- Determine a name for the save file. It must be a file name that does not exist in the library determined above.
- 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.

Emailing 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 email it to **GUMBO** by following these steps:

1. [i] Insure the FTP server is active by running:

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

2. [PC] Choose Start > Programs > Accessories > Command Prompt to open a command prompt.
3. [PC] Create a temporary directory and change to it:

   ```
   md c:\gumbo [Enter]
   cd c:\gumbo [Enter]
   ```

4. [PC] Open an FTP connection to IBM i by substituting your system's host name and running:

   ```
   ftp host_name [Enter]
   ```

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

   ```
   binary [Enter]
   ```

7. [PC] Change to library/file/member mode by running:

   ```
   cd /qsys.lib/qgpl.lib [Enter]
   quote site namefmt 0 [Enter]
   ```

8. [PC] Download the spool save file by running (in this example the save file's name is QGPL/TEST):

   ```
   get qgpl/test [Enter]
   ```

9. [PC] End the ftp session and the command prompt by running:

   ```
   quit [Enter]
   exit [Enter]
   ```

10. [PC] Send email to support@gumbo.com after attaching file c:\gumbo\test.

Include in your email a description of the problem encountered and the command parameter values you were using when it happened.

Appendix A Process Descriptions

What's In This Appendix

This appendix provides detailed descriptions of the processing performed by SpoolMail's mail set up and verification programs. In highly secure environments, it may be against policy to allow third party software to change your system. If this is your situation, you can perform these steps manually. The appendix details:

- Processing Performed During SMTP Verification
- Processing Performed During SMTP Set Up
- Processing Performed During Mailhub Verification
- Processing Performed During Mailhub Set Up

SMTP Verification Process

The following verification steps are performed by the Verify Local SMTP (VFYLOCAL) command when SETUP(*NO) is specified.

Note: No changes are made to your system during verification.

- Verify that TCP Utilities have been installed on the system.

  The system is checked to insure that library QTCP exists. If the library is found then the TCP Connectivity Utilities have been installed on the system.

- Verify that the SMTP distribution queues are present.

  The system is checked for the existence of QSMTPQ distribution queue.

- Verify that a host and domain name have been configured for the system.
  - If the host name is blank, verification fails.
  - If the domain name is blank, verification fails.
- Verify that the system distribution directory is searchable.

  A search is attempted on the system distribution directory.

- Verify that the IBM i Mail Server is active.

  The system is checked for an active job with the job name QMSF. If one or more QMSF jobs are active then the Mail Server is active.

- Verify that TCP is active.

  The system is checked for an active job with the job name QTCPWRK (before V6 JOB QTCPIP). If job is active then TCP is active.

- Verify that TCP loopback is operating correctly.

The TCP interfaces are searched to locate the *LOOPBACK IP address. The *LOOPBACK interface is started if it is not active and its IP address is PINGed to verify that TCP is operating correctly.

- o If the *LOOPBACK interface is not found, verification fails.
- o If the *LOOPBACK interface is not active and cannot be started, verification fails.
- o If the *LOOPBACK interface cannot be PINGed, verification fails.
- Verify that a TCP interface is defined.

The TCP interfaces are searched to locate one or more IP addresses (excluding *LOOPBACK).

- o If no interfaces are found, verification fails.
- Verify that active TCP interfaces are reachable.

The TCP interfaces are searched to locate one or more IP addresses (excluding *LOOPBACK). Each interface is contacted (PINGed) to verify the connection.

- o If an interface is not active, verification fails.
- o If an interface cannot be contacted, verification fails.
- Verify that the SMTP server is active.

The system is checked for an active job with the job name QTSMTPSRVR or QTSMTPSRVD. If either job is active then the SMTP server is active.

- Verify that this host's IP address can be reached by SMTP.
  - o Retrieve the host and domain names for this system.

    If the host name is blank, verification fails.

  - o Verify TCP/IP connection to the host name.

    If the host is contacted, verification is complete and no further processing is performed.

  - o Verify TCP/IP connection to the host.domain name.

    If the host.domain name cannot be contacted, verification fails.

- Verify that message splitting has been turned off.

The current setting cannot be retrieved so no test is performed and it is assumed that splitting has not been turned off yet.

After all tests are completed, a message summarizing the results is issued.

SMTP Set Up Process

The following set up work is performed by the Verify Local SMTP (VFYLOCAL) command when SETUP(*YES) is specified.

- If the TCP utilities have not been installed on the system.
  - Manual intervention is required to install the utilities. Automatic set up cannot perform the installation.
- If QSMTPQ distribution queue is not found.
  - Create the distribution queue using the Add Distribution Queue command:

    ```
    ADDDSTQ    DSTQ(QSMTPQ) RMTLOCNAME(TCPIPLOC)
               DSTQTYPE(*RPDS)
    ```

- If a host or domain name have not been configured.
  - Manual intervention is required to configure a host and domain name. Use option 12 (Change local domain and host names) of the Configure TCP/IP (CFGTCP) command. Automatic set up cannot perform the change.
- If the system distribution directory entry cannot be searched.
  - The directory is changed to allow searches using the Change System Directory Attributes command:

    ```
    CHGSYSDIRA  ALWSCH(*YES)
    ```

- If the IBM i Mail Server is not active.
  - Start the Mail Server using the STRMSF command:

    ```
    STRMSF
    ```

- If TCP is not active.
  - Start TCP using the STRTCP command:

    ```
    STRTCP
    ```

- If TCP loopback is not operating correctly.
  - If missing, *LOOPBACK interface is added using command:

    ```
    ADDTCPIFC   INTNETADR('127.0.0.1') LIND(*LOOPBACK) +
                SUBNETMASK('255.0.0.0') MTU(576)
    ```

  - If loopback PING fails:

    Manual intervention is required to correct the problem, which is beyond the scope of set up.

- If no TCP interfaces are found.

  Manual operation is required to add an interface using the ADDTCPIFC command.

- If a TCP interface cannot be contacted.

  Manual operation is required to correct the problem. If the interface cannot be contacted because it is not active, start the interface using the STRTCPIFC command.

- If the SMTP server is not active.
  o Start the SMTP server using the STRTCPSVR command:

  ```
  STRTCPSVR   SERVER(*SMTP)
  ```

- If the host's IP address cannot be reached by SMTP.
  o If system is using a remote name server, set up fails.

     Manual operation required. Contact the remote name server's administrator to add this system's host name.

  o If multiple TCP interfaces are found, set up fails.

     Manual operation required. Add this system's name to IBM i's host table using the ADDTCPHTE command.

  o If no TCP interfaces are found, set up fails.

     Manual operation required. Add a TCP interface using the ADDTCPIFC command.

  o An entry is added for this host using the Add TCP Host Table Entry command:

  ```
  ADDTCPHTE   INTNETADR(&INTERNET) HOSTNAME((&HOST)) +
                TEXT('Entry Added By Gumbo Auto TCP/IP +
                Config')
  ```

- If message splitting has not been turned off.
  o Message splitting is turned off

     The POP attributes are changed:

  ```
  CHGPOPA     MSGSPLIT(*NOMAX)
  ```

After all steps are completed, a message summarizing the results is issued.

Mailhub Verification Process

The following verification steps are performed by the Verify Mail Router (VFYMAILHUB) command when SETUP(*NO) is specified.

Note: No changes are made to your system during verification.

- Verify that TCP is active.

The system is checked for an active job with the job name QTCPWRK (before V6 JOB QTCPIP). If job is active then TCP is active.

- Resolve system names and internet addresses for command parameters and current mail hub server.
    - o Verify domain name server.

      If a domain name server is configured, it is tested to insure that it is responding. If it does not respond, verification fails.

    - o Retrieve currently configured mail hub server name and IP
    - o Resolve internet address parameter.

      If a special value was specified, it is resolved. If it can not be resolved, verification fails.

    - o Resolve remote system parameter.

      If a special value was specified, it is resolved. If it can not be resolved, verification fails.

- Edit the resulting names and IPs for conflicts.
    - o Edit remote system and internet address IP.

      If the IP of the remote system is different from the internet address, verification fails.

    - o Edit remote system and internet address names.

      If the name of the internet address is different from the remote system name, verification fails.

    - o Edit current mail hub server and internet address IP.

      If the IP of the current mail hub server is different from the internet address, verification fails.

- Verify that the internet address is responding.

  The internet address is PINGed to insure that it is reachable and responding. If it is not, verification fails.

- Verify that the internet address is accepting SMTP mail.

  The internet address is tested to insure that it is accepting SMTP mail from this system. If it is not, verification fails.

- Verify that remote system's IP can be resolved.

    If an IP cannot be resolved, verification fails.

- Verify that the mail hub server is configured.

    If the remote system is not configured as the mail hub server, verification fails.

After all tests are completed, a message summarizing the results is issued.

Mailhub Set Up Process

The following set up work is performed by the Verify Mail Router (VFYMAILHUB) command when SETUP(*YES) is specified.

- If TCP is not active.
    - Start TCP using the STRTCP command:

        ```
        STRTCP
        ```

- If a mail hub server is currently configured.

    SETUP(*YES) is suppressed. No changes will be made to the system. VFYMAILHUB will be processed as SETUP(*NO). To avoid suppression, remove the current mail hub server by running:

    ```
    CHGSMTPA  FWDHUBSVR(*NONE)
    ```

- If an entry currently exists on the SMTP *HOSTAUTH list for the remote system.

    SETUP(*YES) is suppressed. No changes will be made to the system. VFYMAILHUB will be processed as SETUP(*NO). To avoid suppression, remove the current SMTP *HOSTAUTH list entry by running:

    ```
    RMVSMTPLE TYPE(*HOSTAUTH) HOSTNAME('configured_host_name')
    ```

- If system name and internet address resolution fails.
    - If a domain name server is configured but not responding.

        Manual intervention required. Either insure that the configured domain name server is available or remove the domain name server from IBM i's configuration using option 13 of the CFGTCP menu.

    - If the internet address parameter cannot be resolved.

        Manual intervention required to correct the internet address parameter.

    - If the remote system parameter cannot be resolved.

        Manual intervention required to correct the remote system parameter.

- Edit the resolved names and IPs for conflicts.
  - o If the remote system and internet address IPs are different.

    Manual intervention required to correct the parameters.

  - o If the remote system and internet address names are different.

    Manual intervention required to correct the parameters.

  - o If the current mail hub server and internet address IPs are different.

    Manual intervention required. Either correct the parameters or remove the currently configured mail hub server by running the following command:

    ```
    CHGSMTPA   FWDHUBSVR(*NONE)
    ```

- If the internet address is not responding.

  Manual intervention required. Either correct the internet address or make the system at that address ready.

- If the internet address is not accepting SMTP mail.

  Manual intervention required. Either correct the internet address, or contact the system's administrator and request that the system accept SMTP from IBM i. The words you use to request this differ depending on the software running on the remote system:

  - o For Microsoft's Exchange Server request that the "Internet Mail Connector" be configured and started. Then request that "SMTP forwarding" be enabled for your system's IP.
  - o For Lotus' cc:Mail request that the "Link to SMTP" be configured and started.
  - o For all others request that the "SMTP gateway" be configured and started.
- If the remote system's IP cannot be resolved.

  Add an entry using the Add TCP/IP Host Table Entry (ADDTCPHTE) command:

  ```
  ADDTCPHTE   INTNETADR(&INTNETADR) HOSTNAME((&RMTSYS)) +
              TEXT('Mailhub added by Gumbo +
                    VFYMAILHUB command')
  ```

- If authentication username and password are included.

  Add the authentication information to the SMTP *HOSTAUTH list:

  ```
  ADDSMTPLE   TYPE(*HOSTAUTH) HOSTNAME(&RMTSYS) +
              USERNAME(&AUTHUSRNAM) PASSWORD(&AUTHPWD)
  ```

- If the mail hub server is not configured.

  Configure the mail hub server using the Change SMTP Attributes (CHGSMTPA) command:

```
CHGSMTPA   FWDHUBSVR(&RMTSYS)
```

After all steps are completed, a message summarizing the results is issued.

Appendix B Record Descriptions

What's In This Appendix

This appendix provides information on SpoolMail files and structures. The appendix:

- Describes the display page data record.

Display Page Data Record

The display page data record PDPAGDRF is in model file SMPAGDD which is used by the Display Page Data (DSPPAGDTA) command to generate output files.

PDPAGDRF is made up of several groups of fields that describe an element of the page.

- 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.

- Location. These fields describe the location of the data in the spooled file.

PDPAGE	Page number.	
PDLINE	Line number the data appears on.	
	-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.
PDPOS	Position on the line the data starts. When PDLINE contains one of the special values, PDPOS is zero.	

- 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 C Notices

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Appendix D Order Form

```
Name           _____
Company        _____
Address        _____
City/State/Zip _____
Country        _____
Phone          _____
Email          _____
```

I have read and agree with the SpoolMail Software License Agreement. I am ordering the following licenses:

```
System Wide License  -- or --  Partition Only License
                     Proc.                      Prt. Proc.
-- Serial Number ---  Group    -- Serial Number ---  No.  Count
_____   _____    _____   ___  _____
_____   _____    _____   ___  _____
_____   _____    _____   ___  _____
```

See the Price List for pricing information. The current Price List is available at www.gumbo.com. License price includes one year of maintenance services. Add the amount shown on the price list for each additional year of maintenance services. In Washington state include sales tax (your local rate or 9.5%).

```
Licenses . . . . . . . . . . . . . . . . . . .  _____
Maintenance  . . . . . . . . . . . . . . . . .  _____
In WA state, add sales tax . . . . . . . . . .  _____
Total enclosed . . . . . . . . . . . . . . . .  _____
Signature _____  Date _____
Title _____
```

Make checks payable to:

GUMBO
Software, Inc.

```
809 W Howe St
Seattle, WA 98119
United States of America
Phone:  206-284-5078
Email:  support@gumbo.com
Web:    www.gumbo.com
```

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Rev: 2001/09/22