

GUMBO
Software, Inc.



Gumbo Mail

Programmer's Guide and Reference



i5/OS Send Mail

Edition

Sixteenth Edition (April 2009)

This edition applies to the licensed program Gumbo Mail (Program 2A55SM2), Version 1 Release 5 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 GUMBOMAIL menu or in PDF format in directory /Gumbo/Proddata/2A55SM2/doc on your system or on the web.

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Chapter 1 Introduction

What's In This Chapter

This chapter introduces you to Gumbo Mail. The chapter:

- Describes the features of Gumbo Mail.
- Describes what Gumbo Mail does.
- Describes Gumbo Mail's relationship to other products.
- Outlines future directions for the product.

Gumbo Mail Features

Gumbo Mail is a software utility that allows you to send email with MIME attachments directly from your System i. With Gumbo Mail you can add timely, convenient and inexpensive email output to any application. Gumbo Mail integrates with i5/OS's built-in mail support to provide delivery to any email recipient. All processing is performed on the System i, providing a stable platform for generating email.

Gumbo Mail's features include:

- Control over the message headers including specification of:
 - From: address.
 - Multiple To:, Cc:, Bcc:, and ReplyTo: address(es).
 - Subject:
 - Confirmation of delivery (read receipt) request.
- Support for digitally signing the generated email. Recipients can be sure of the email's source and verify that it has not been altered.
- Support for creating messages in a variety of character encodings including UTF-8.
- Support for specifying the message body directly.
- Support for including files from i5/OS's Integrated File System (IFS), either as attachments or in the message body.
- MIME and S/MIME compliance.
- Direct entry of custom MIME headers.
- Double Byte Character Set (DBCS) enabled.
- Support for i5/OS distribution lists.
- A Java free i5/OS implementation that avoids the JavaMail api and the Java Virtual Machine.

Commands to help you trouble shoot and, optionally, automatically configure i5/OS to send mail are also included with Gumbo Mail.

What Gumbo Mail Does

Gumbo Mail is Gumbo Software, Inc.'s rendition of the popular SendMail program, implemented on i5/OS. The main function of Gumbo Mail is accessed by running the Gumbo Send Mail (GSENDMAIL) command. The command creates a MIME compliant email message from the specified input and email address(es) and hands it off to i5/OS for delivery using i5/OS's built-in mail support.

i5/OS processes the email and either delivers it directly to the recipient(s) or forwards it to a mail router for delivery.

Product Positioning

Gumbo Software, Inc. has several i5/OS based products:

Number	Licensed Program
2A55RM1	Report Manager - Monitors output queues and distributes spooled files.
2A55SM1	SpoolMail - Sends spooled files as email.
2A55SAM	Spool-a-Matic - Converts spooled files into PC files.
2A55XL1	Excel-erator - Converts/emails database files into/as Excel spreadsheets.

- 2A55DCR** Dicer - Merge/sort/split/duplicate spooled files.
- 2A55RDA** Report Designer - Edit DDS, RPG and ILE/RPG print specifications.
- 2A55SM2** Gumbo Mail - Sends email from your applications.

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

Function	Product						
	RM1	SM1	SAM	XL1	DCR	RDA	SM2
Monitor an output queue for work	YES	YES	YES	-	-	-	-
Spooled file distribution	YES	-	-	-	-	-	-
Burst (split) spooled files	YES	YES	YES	-	YES	-	-
Merge/sort/dup spooled files	YES	-	-	-	YES	-	-
Convert spool to text PC file	YES	-	YES	-	-	-	-
Convert spool to PDF/RTF/HTML...	-	-	YES	-	-	-	-
Convert database file to Excel	-	-	-	YES	-	-	-
Email spool as text attachment	YES	YES	-	-	-	-	-
Email spool as PDF/RTF/HTML...	-	YES	-	-	-	-	-
Email database file as Excel	-	-	-	YES	-	-	-
Email any IFS file	-	YES	-	YES	-	-	YES
Set up i5/OS SMTP & mail router	YES	YES	-	YES	-	-	YES
Edit DDS, RPG, ILE/RPG source	-	-	-	-	-	YES	-

Future Directions

Future releases of Gumbo Mail will include a broader list of features. We want to hear your ideas for enhancements to this product.

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

Chapter 2 Installation

What's In This Chapter

This chapter describes:

- How to install Gumbo Mail.
- How to verify that Gumbo Mail is installed correctly.
- How to include the GUMBOMAIL 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 Gumbo Mail from the system.
- How to find additional installation information.
- How to contact technical support.
- Hot site installation.

Installing Gumbo Mail

Follow these instructions to install Gumbo Mail V1R5M0 on your System i:

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

1. Sign on to the system as the security officer (QSECOFR).
2. Verify that your machine is at i5/OS V5R4M0 or later by running:

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

Note: If you are running a version of i5/OS earlier than V5R4M0 you can not install Gumbo Mail V1R5M0 on your machine. You must install an earlier version of Gumbo Mail or upgrade the operating system.

3. Verify that user domain objects are allowed in the libraries GUMBOMAIL 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 GUMBOMAIL 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 i5/OS 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 distribution media in the appropriate device.
6. Submit the Restore Licensed Program (RSTLICPGM) command to batch:

```
RSTLICPGM LICPGM(2A55SM2) DEV(device-name) LNG(2924)
```

Note: "device-name" is the device the media was mounted on 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 times.

When the RSTLICPGM command finishes a new library GUMBOMAIL and a new directory '/Gumbo/ProdData/2A55SM2' are on the system. You can access the Gumbo Mail menu by entering the following command:

```
GO MENU (GUMBOMAIL/GUMBOMAIL)
```

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

```
DSPPTF LICPGM(2A55SM2)
```

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

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

Verifying Gumbo Mail Installation

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

```
CHKPRDOPT PRDID(2A55SM2) RLS(V1R5M0) 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, Gumbo Mail 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.

Library List Considerations

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

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

```
GUMBOMAIL/CHGSM2AUT
```

Library GUMBOMAIL 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

Gumbo Mail operates under i5/OS V5R4M0 or higher. Releases occur on a different schedule than IBM releases. Once Gumbo Mail is installed the following considerations apply:

- A new release of i5/OS may be installed without installing a new release of Gumbo Mail.

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

- A new release of Gumbo Mail may be installed without installing a new release of i5/OS.

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

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

You can skip "missed" releases.

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

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

- When a new release of Gumbo Mail is installed in the same library as an old release the following processing is performed in order to preserve data and Gumbo Mail authorization information:
 1. The Gumbo Mail library is saved to QGPL/SM2VxRyMz. Where VxRyMz is the current release.
 2. Product objects that contain default settings and operational information are copied to library QTEMP.
 3. The Gumbo Mail library is cleared.
 4. Gumbo Mail 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/SM2VxRyMz is deleted.

Note: Gumbo Software recommends making a backup of the current release before installing a new release of Gumbo Mail.

New Release Testing

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

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

To test a new release, follow this procedure:

1. Review the Enhancement Summary for any release to release considerations that could affect your installation.
2. Install the new release in library SM2V1R5M0 and directory '/Gumbo/ProdData/2A55SM2V1R5M0':

```
RSTLICPGM LICPGM(2A55SM2) DEV(device-name) LNG(2924)
LIB(SM2V1R5M0) REPLACERLS(*NO)
CODHOMEDIR('/Gumbo/ProdData/2A55SM2V1R5M0')
```

where device-name is the device the media was mounted on.

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

```
DLTLICPGM LICPGM(2A55SM2) RLS(V1R5M0) OPTION(*ALL)
```

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

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

Deleting Gumbo Mail

Follow these instructions to remove Gumbo Mail from your System i:

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

```
DLTLICPGM LICPGM(2A55SM2) OPTION(*ALL)
```

Additional Installation Information

Additional detailed installation information and instructions can be found in the InfoCenter i5/OS and related software > Install, upgrade, or delete i5/OS and related software SC41-5120.

Technical Support

If you encounter a problem with Gumbo Mail 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:

GUMBO
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809 W Howe St
Seattle, WA 98119
United States of America
Phone: (206) 284-5078
Email: SUPPORT2009@GUMBO.COM
Web: www.gumbo.com

Hot Site Installation

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

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

The correct sequence of steps is as follows:

1. Install the software and enter the permanent authorization 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. The first time the software is used on the back up or fail over machine the product's authorization algorithm will create and install a temporary authorization code running for 30 days. This allows you install the authorized copy in advance of a disaster.

Chapter 3 Menu

What's In This Chapter

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

Accessing The Menu

The Gumbo Mail commands and functions that you will use most often are collected on a menu named GUMBOMAIL. To access this menu use the Go To Menu (GO) command:

```
GO MENU (GUMBOMAIL/GUMBOMAIL)
```

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

Menu Options

```
Figure: Gumbo Mail Menu
GUMBOMAIL                               Gumbo Mail                               System: SM2
Select one of the following:
  1. Online Manual
  Gumbo Mail
  2. Gumbo Send Mail                               GSENDMAIL
  Verification and Set Up
  10. Verify that Gumbo Mail is installed correctly
  11. Mail Verification And Set Up Menu
  Other Options
  61. Display Current PTF Status                   DSPPTF
  62. Change Gumbo Mail Authorization             CHGSM2AUT
  63. Search Help Index                           STRSCHIDX
  64. Change Gumbo Mail Default                   CHGSM2DFT
                                                More...
Selection or command
====>
F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel
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```

The Gumbo Mail (GUMBOMAIL) menu options are summarized below:

Note: See the detailed descriptions in later chapters for a complete explanation of each option.

Option 1. Online Manual

The online manual allows you to view the contents of the Gumbo Mail Manual from a work station.

Option 2. Gumbo Send Mail

The Gumbo Send Mail (GSENDMAIL) command generates an email message and sends it to a recipient(s).

Option 10. Verify the product is installed correctly

Installation verification checks to make sure that Gumbo Mail has been correctly installed.

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 61. Display Current PTF Status

Displays the Gumbo Mail PTFs that have been applied to the software.

Option 62. Change Gumbo Mail Authorization

The Change Gumbo Mail Authorization (CHGSM2AUT) command changes the authorization code for Gumbo Mail. The command is used to extend a demonstration period or to permanently authorize Gumbo Mail for a system or a partition.

Option 63. Search Help Index

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

Option 64. Change Gumbo Mail Default

The Change Gumbo Mail Default (CHGSM2DFT) command changes values used by Gumbo Mail to control processing and other activities.

Option 65. Check Gumbo Mail Authorization

The Check Gumbo Mail Authorization (CHKSM2AUT) command executes Gumbo Mail's authorization verification function. This allows you to determine whether and how the product is authorized for use.

Chapter 4 Set Up

What's In This Chapter

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

- How to select a quick start mail set up procedure.
- Quick start mail set up - LAN.
- Quick start mail set up - Domino/400 and one SMTP stack.
- Quick start mail set up - Domino/400 and two SMTP stack.
- How to determine if you need to set up SMTP on your System i.
- How to use the Verify/Set Up Local SMTP (VFYLOCAL) command.
- Manual SMTP steps you may need to perform.
- How to determine if you need to set up a mail router for your System i.
- How to use the Verify/Set Up Mail Router (VFYROUTER) command.
- How to store email addresses as directory entries.
- How to set up postmaster and non-delivery accounts.
- How to forward mail to another address.

Selecting The Quick Start Mail Set Up Procedure

There are three quick start mail set up procedures for configuring i5/OS mail services described in this chapter. The configuration procedures are:

- Quick start mail set up - LAN.
- Quick start mail set up - Domino/400 and one SMTP stack.
- Quick start mail set up - Domino/400 and two SMTP stack.

You only perform one of these. If you are not running Domino/400 on the System i you are setting up, proceed to the section for a typical LAN. If you are running Domino/400 on the System i you are setting up you must select between the two Domino/400 mail set up procedures.

Our software uses i5/OS's SMTP services to deliver mail. Originally, Domino/400's SMTP stack or i5/OS's SMTP could be active on a System i but not both. To use both Domino/400 and i5/OS mail services, Domino/400 is configured to use i5/OS's SMTP in place of its own. That is Domino/400 and i5/OS share a single (i5/OS) SMTP stack and no new IP address is required.

More recently, IBM has added a feature that allows i5/OS's SMTP stack to bind to a specific IP address. With this feature, both the Domino/400 and i5/OS SMTP stacks can be active at the same time. This appears to be the preferred set up as it leaves Domino/400 untouched but allows the i5/OS SMTP stack to be active. The feature requires that a new IP address be designated for the i5/OS SMTP stack.

Determine which alternative your installation will use and proceed to the one or two SMTP stack mail set up procedure.

Quick Start Mail Set Up - LAN

If yours is a typical LAN installation the following steps will get you started quickly. The typical LAN installation is an System i connected to a LAN with the post office (a.k.a. mail router) on a LAN attached PC running Exchange, Notes, Domino, Groupwise or similar mail server with or without a connection to the internet at large. At the typical installation this is the first application to generate email from the System i. If any of the steps fail or yours is a more complex installation, move on to the detailed sections of this chapter.

1. Install the product on your System i (see the Installation chapter for details).
2. Display the product menu.
3. Run the option to verify that the product is installed correctly.
4. Display the Mail Verification And Set Up menu.

5. Run option 12 to set up the System i.
6. Determine the name and IP number of the mail router.
7. Run option 14 to set up the mail router specifying its name and IP.
8. Return to the product menu by hitting F12.
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 your System i.

Note: If your System 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.

Quick Start Mail Set Up - Domino/400 One SMTP

If yours is a typical Domino for i5/OS installation, the following steps will get you started quickly and use only one SMTP stack. The typical Domino for i5/OS installation is an System i connected to a LAN with Domino for i5/OS installed using the Domino SMTP stack with or without a connection to the internet at large. At the typical installation this is the first application to generate email from the System i, outside Domino. If any of the steps fail or yours is a more complex installation, move on to the detailed sections of this chapter.

Note: Additional detailed information can be found in the Redbook Lotus Domino for OS/400 R5: Implementation SG24-5592-00

1. Install the product on your System i (see the Installation chapter for details).
2. Display the product menu.
3. Run the option to verify that the product is installed correctly.
4. Run the End Domino Server (ENDDOMSVR) command.
5. Change the Domino Server to use i5/OS's SMTP stack:
 1. Run the Change Domino Server (CHGDOMSVR) command.
 2. Add *SMTP to the "Internet mail packages MAIL()" parameter.
 3. Change the "SMTP services SMTP()" parameter from *DOMINO to *MSF.
6. Display the Mail Verification And Set Up menu.
7. Run option 12 to set up the System i.
8. Run option 14 to set up the mail router specifying its name and IP.
9. Run option 61 to restart/purge local mail on your System i.

10. Run the Start Domino Server (STRDOMSVR) command.
11. Return to the product menu by hitting F12.
12. Send a test to yourself using your "real" email address.
13. 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 (*DOMINO)  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. Send a test to yourself taking by taking the default *CURRENT.
3. 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.

Quick Start Mail Set Up - Domino/400 Two SMTP

If yours is a typical Domino for i5/OS installation, the following steps will get you started quickly using two SMTP stacks. The typical Domino for i5/OS installation is an System i connected to a LAN with Domino for i5/OS installed using the Domino SMTP stack with or without a connection to the internet at large. At the typical installation this is the first application to generate email from the System i, outside Domino. If any of the steps fail or yours is a more complex installation, move on to the detailed sections of this chapter.

Note: Additional detailed information can be found in the Redbook Lotus Domino for i5/OS Internet Mail Topics SG24-5990-00

1. Install the product on your System i (see the Installation chapter for details).
2. Display the product menu.
3. Run the option to verify that the product is installed correctly.
4. Determine the i5/OS version by running:

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

5. For versions before V5R1M0 run DSPPTF 5769TC1 and insure that the bind to specific IP PTFs are installed:

i5/OS	Required PTFs
V4R5M0	SF60827, SF61136
V4R4M0	SF60787, SF60764
V4R3M0	SF58661, SF59663
V4R2M0	SF55697, SF55704

6. Determine the new IP address to be assigned to i5/OS's SMTP stack. If your i5/OS SMTP stack will use Domino to deliver email to internet users (the recommended approach) and you otherwise do not have an internet address for the i5/OS SMTP stack, you can use internet 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.

Note: This example will use 192.168.1.1.

7. Determine the Internet Address, Line Description and Line Type used by the existing TCP/IP interface:
 1. Run the Configure TCP/IP (CFGTCP) command.
 2. Select option 1: Work with TCP/IP interfaces.
 3. Note the Internet Address, Line Description and Line Type used by the existing TCP/IP interface (Do not use *LOOPBACK).

Note: This example will use Internet Address 10.10.10.2, Line Description LINE01 and Line Type *ELAN.

8. Insure that Domino's SMTP stack is bound specifically to the IP number of the existing interface:
 1. Prompt the CHGDOMSVR command for the Domino server and hit F10.
 2. Locate the TCP/IP port options (TCPOPT) parameter.
 3. Locate the Internet Address element.
 4. If the internet address is *SYSTEM, change it to the IP number of the existing interface (In our example it is 10.10.10.2).
 5. Restart Domino.
9. Add a TCP/IP interface for the i5/OS SMTP stack:

```
ADDTCPIFC INTNETADR(192.168.1.1) LIND(LINE01)
          SUBNETMASK('255.255.255.0')
```

10. Start the TCP/IP interface:

```
STRTCPIFC INTNETADR(192.168.1.1)
```

11. Create the binding data areas:

```
CRTDTAARA DTAARA(QUSRSYS/QTMSCBNDIP) TYPE(*CHAR) +
          LEN(16) VALUE('192.168.1.1') TEXT('SMTP +
          Bind To Specific IP') AUT(*USE)
CRTDTAARA DTAARA(QUSRSYS/QTMSBNDIP) TYPE(*CHAR) +
          LEN(16) VALUE('192.168.1.1') TEXT('SMTP +
          Bind To Specific IP') AUT(*USE)
```

Note: For V5R1M0 you can use OpsNav to accomplish the binding. See the Bindings tab of the SMTP properties page.

12. Determine your company's domain name. For us it is gumbo.com. For you it is probably the portion of your email address to the right of the @

Note: This example will use acme.com.

13. Add a host table entry for the new interface:

```
ADDTCPHTE INTNETADR(192.168.1.1) HOSTNAME(('os400smtp')
          ('os400smtp.acme.com')) TEXT('OS/400 SMTP')
```

Note: If you are using DNS, make the same addition to the configuration.

14. Change the identification used by i5/OS's SMTP stack to reflect the new information:

```
CHGTCPDMN HOSTNAME('os400smtp') DMNNAME('acme.com')
```

15. Display the Mail Verification And Set Up menu.
16. Run option 12 to complete the i5/OS SMTP set up.
17. Run option 14 to set up Domino as the mail router for the i5/OS SMTP stack. Specify Domino's host name (not server name) and IP.

Note: If you will use a mail router other than Domino and you used an address from the "192.168.0.0" class B network, you must also add a TCP/IP route using the Add TCP/IP Route (ADDTCPRTE) command.

18. Return to the product menu by hitting F12.
19. Send a test to yourself using your "real" email address.
20. 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 (*DOMINO)  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. Send a test to yourself taking by taking the default *CURRENT.
3. 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.

Do I Need To Set Up SMTP

Our software works in conjunction with the Mail Services included in i5/OS. If you are already successfully sending email to users from your System i then no further set up is required.

If you are not yet sending email from your System i or are not sure that your System i has been set up correctly for SMTP then continue with this chapter.

Using The SMTP Set Up Command

The Verify/Set Up Local SMTP (VFYLOCAL) command performs automatic verification and set up of SMTP on your System i. The command accepts a single parameter that determines if changes are made to i5/OS. To verify the System 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 your System 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 a verification first and review the results before running automatic set up.

Manual SMTP Steps You May Need To Perform

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

- Installing SMTP and TCP Connectivity Utilities

In order to send email from your System i, SMTP support must be installed. SMTP functions are delivered free of charge with i5/OS as part of a separately installed licensed program product: 5722-TC1 (V5) or 5769-TC1 (V4) TCP/IP Connectivity Utilities Detailed installation information and instructions can be found in iSeries Software Installation SC41-5120.

- Changing Local Domain and Host Names

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

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

As an example, we use gumbo.com as the domain name and the System i system name as the host name on our machines.

- Creating a TCP Interface

A TCP interface establishes your System i 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 internet address and subnet mask to use. If you have a network administrator or other person responsible for assigning internet addresses (a.k.a. IP numbers), contact them. If you will connect your System i directly to the Internet, you must request that your internet service provider assign you an IP number or you must request that the InterNIC assign you a network number. If you will not connect your System i directly to the internet, and otherwise do not have an internet address for your system, you can use internet 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 internet 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.

- Setting Up Local Users

A local user is someone who has a user profile (sign-on) on your System 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 doesn't have a directory entry run:

```
ADDIRE 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 your System i as joe@acme.com.

- 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 your System 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 i5/OS Mail Server by including the command:

```
STRMSF
```

- Changing The Time Zone System Value

Note: This item applies to i5/OS releases V5R3M0 or later. If you are running a release prior to V5R3M0, see the item below.

The time stamp placed in the email is based on the system values QTIME and QTIMZON. Since most System i 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 "Time management" under "System management" at the IBM Information Center <http://as400bks.rochester.ibm.com/pubs/html/as400/infocenter.htm>

- Changing The Universal Time Coordinate Offset System Value

Note: This item applies to i5/OS releases prior to V5R3M0. If you are running V5R3M0 or later, see the item above.

The time stamp placed in the email is based on the system values QTIME and QUTCOffset. While most System i have the correct time, few have the correct QUTCOffset which stands for "Coordinated universal time offset". The value specifies the difference in hours and minutes between UTC, also known as Greenwich mean time, and the current system time.

The following table shows the correct setting for several time zones:

Time Zone	Standard/Day Light Savings
Atlantic	-04:00 / -03:00
Eastern	-05:00 / -04:00
Indiana	-05:00 / (no change)
Central	-06:00 / -05:00
Mountain	-07:00 / -06:00
Arizona	-07:00 / (no change)
Pacific	-08:00 / -07:00
Alaska	-09:00 / (no change)
Hawaii-Aleutian	-10:00 / (no change)
Dublin, Edinburgh	+00:00
London, Lisbon	+00:00
Berlin, Stockholm,	+01:00
Rome, Bern, Amsterdam	+01:00
Brussels, Vienna	+01:00
Paris, Madrid	+01:00
Prague, Warsaw	+01:00
Hong Kong, Perth	+08:00
Singapore, Taipei	+08:00
Tokyo, Osaka	+09:00
Adelaide, Darwin	+09:30
Brisbane, Canberra	+10:00
Melbourne, Sydney	+10:00
Wellington, Auckland	+12:00

Additional detailed information and instructions can be found in the Email topic in the iSeries Information Center at <http://www.iseries.ibm.com/infocenter>.

Do I Need To Set Up A Mail Router

i5/OS SMTP support can be configured to deliver email to an external mail router when SMTP cannot find the name and address of the recipient in the system or personal alias tables or when SMTP is not able to resolve the address of the recipient.

An external mail router is a system that is running a mail application. Examples of mail applications include:

- Microsoft Exchange
- Lotus Notes/Domino
- Group Wise
- Your Internet Service Provider's (ISP's) mail gateway.

If you want the mail application to handle delivery for mail originating from i5/OS, then continue with mail router set up.

If your configuration does not include a system running a mail application, or if you are running Domino for i5/OS with one SMTP stack, you should not set up a mail router. If you intend to have i5/OS directly deliver mail to recipients, you do not need to set up a mail router.

Using The Mail Router Set Up Command

The Verify/Set Up Mail Router (VFYROUTER) command performs automatic verification and set up of a mail router for your System i. The command accepts a three parameters that determine if changes are made to i5/OS and the identity of the mail router. To verify the mail router without making any changes select option 13 on the Mail Verification And Set Up menu or run the following command (substitute the name and internet address of your external mail router for "host_name" and "ip"):

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

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

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

In both cases mail router 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 VFYROUTER, 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 a verification first and review the results before running automatic set up.

Storing Email Addresses As Directory Entries

i5/OS's system distribution directory can contain addressing information for users. In essence you store the user's email address in a directory entry. Directory entries can be created for users who are local to the System i (have an i5/OS user profile) and for users who are remote (do not have an i5/OS user profile). Local users can receive their mail on the System i using i5/OS's POP server or from a remote mail application such as Exchange.

To add a directory entry for local user MYUSER who has a user profile on the System i MYSYSTEM run the following command (for this example assume the user's email address is billg@acme.com):

```
ADDIRE 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 i5/OS run:

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

Note: If the user already has a directory entry, change it by running:

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

To add a directory entry for a remote user who will receive email mail from the System i run the following command (for this example assume the user's email address is johnp@acme.com):

```
ADDSDIRE 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 i5/OS user profile run the following command (for this example assume the user's email address is suej@acme.com):

```
ADDSDIRE 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.

Setting Up Postmaster and Non-delivery Accounts

i5/OS provides support for postmaster and non-delivery accounts and provides feedback on mail operations to these if they exist. Gumbo suggests that you set up both and forward them to a real person who can monitor for problems. This section describes how to set up these generic accounts. See > Forwarding Mail To Another Address for details on setting up the forward. To create the generic accounts:

1. Create user profiles for the postmaster and non-delivery accounts by running:

```
CRTUSRPRF USRPRF(POSTMASTER) PASSWORD(*NONE)
  STATUS(*DISABLED) INLMNU(*SIGNOFF)
  TEXT('Postmaster Account')
CRTUSRPRF USRPRF(NONDELIVER) PASSWORD(*NONE)
  STATUS(*DISABLED) INLMNU(*SIGNOFF)
  TEXT('Non-delivery Account')
```

2. Determine your System i's Host name and Domain name by running the command CFGTCP and taking option 12. When a period is placed between these, they are the fully qualified host name.
3. Enroll the postmaster and non-delivery accounts by running:

Note: In this example, the preceding step resulted in a Host name of 'iseries' and Domain name of 'widget.com'.

```
ADDSDIRE USRID(POSTMSTR EMAIL) USRD('Postmaster')
  USER(POSTMASTER) SYSNAME(*LCL)
  MSFSRVLVL(*SYSMS) PREFADR(*SMTP)
  USRDFNFLD((SMTPAUSRID SMTP 'postmaster')
    (SMTPDMN SMTP 'iseries.widget.com'))
ADDSDIRE USRID(NONDELIV EMAIL) USRD('Non-delivery')
  USER(NONDELIVER) SYSNAME(*LCL)
  MSFSRVLVL(*SYSMS) PREFADR(*SMTP)
  USRDFNFLD((SMTPAUSRID SMTP 'nondelivery')
    (SMTPDMN SMTP 'iseries.widget.com'))
```

The accounts are now ready for use.

Forwarding Mail To Another Address

i5/OS allows you to forward email directed to one email address to another address. This is useful for example when a user's email address changes or when a specific individual should receive mail directed at generic email addresses such as `postmaster@<hostname.localdomain>` and `nondelivery@<hostname.localdomain>` set up in the previous section. To enable mail forwarding on your System i, create two user-defined fields in the system distribution directory by running the following command:

```
CHGSYSDIRA USRDFNFLD((FORWARDING *NONE *ADD *ADDRESS 256)
                    (FWDSRVLV *NONE *ADD *MSFSRVLV 1))
```

Note: You only do this step once per System i, the fields are defined in the system distribution directory from then on.

Suppose the 2 generic accounts set up in the previous sections should be forwarded to the email address `billg@widget.com` for handling. Run the following commands:

```
CHGDIRE USRID(POSTMSTR EMAIL)
        USRDFNFLD((FORWARDING *NONE 'billg@widget.com))
        MSFSRVLV(FWDSRVLV *NONE)
        PREFADR(FORWARDING *NONE ATMIME)
CHGDIRE USRID(NONDELIV EMAIL)
        USRDFNFLD((FORWARDING *NONE 'billg@widget.com))
        MSFSRVLV(FWDSRVLV *NONE)
        PREFADR(FORWARDING *NONE ATMIME)
```

Note: On some systems, "ATMIME" is not defined and, in this case, use "MIME" in place of "ATMIME".

Forwarding is now set up.

Chapter 5 Implementation

What's In This Chapter

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

- Gives an overview of implementation choices.
- Describes changing programs to send email.
- Describes manually sending email.
- Describes email address formats.
- Describes the from (originator) address.
- Describes using distribution lists.
- Describes adding line breaks to the message.
- Describes digitally signing the message.
- Describes accessing files in the Integrated File System.

Overview

The first step in implementing Gumbo Mail is to set up i5/OS'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 Gumbo Mail is accessed by running the Gumbo Send Mail (GSENDMAIL) command. The command creates a MIME compliant email message from the specified input and email address(es) and hands it off to i5/OS for delivery using i5/OS's built-in mail support. To implement Gumbo Mail in your environment you have two basic choices:

1. Modify the programs that will be sending email to directly run the Gumbo Send Mail (GSENDMAIL) command.

Pros	The emailing is automatic.
Cons	Programs must be modified and recompiled.

2. Manually run the Gumbo Send Mail (GSENDMAIL) command from a command line.

Pros	Good for casual or on demand use, no program changes required.
Cons	Requires manual operations and scheduling.

In all cases, using i5/OS 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

Gumbo Mail can be implemented by changing programs that will be sending email directly. A typical batch Control Language (CL) program that creates a PC file in the Integrate File System (IFS) would contain the following CL sequence:

```
      .  
      .  
CHGCURDIR  DIR('/Reports/Weekly/Inventory')  
OVRDBF    FILE(INVENTORY) TOFILE(INVLIB/INVENTORY)  
OVRDBF    FILE(CUSTOMER) TOFILE(INVLIB/CUSTOMER)  
CALL      PGM(INVLIB/INV320)  
      .  
      .
```

If program INV320 generates PC file Status.pdf then the following changes will send the file to the distribution list INV320 REPORT:

```
.
.
CHGCURDIR  DIR('/Reports/Weekly/Inventory')
OVRDBF     FILE(INVENTORY) TOFILE(INVLIB/INVENTORY)
OVRDBF     FILE(CUSTOMER) TOFILE(INVLIB/CUSTOMER)
CALL       PGM(INVLIB/INV320)
GSENDMAIL  SUBJECT('Weekly Status Report') +
           MSG('Attached is your weekly status report.') +
           OBJ((Status.pdf)) +
           TOUSRID(INV320 REPORT)
.
.
```

The PC 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

Gumbo Mail can be implemented by assigning an operator the task of manually sending email. Suppose the operator should send the files Status.pdf and Updates.pdf in the directory /Reports/Weekly/Inventory to the distribution list INV320 REPORT. The following command sends them with a delivery confirmation request:

```
GSENDMAIL  SUBJECT('Weekly Status Report')
           OBJ((' /Reports/Weekly/Inventory/Status.pdf')
           (' /Reports/Weekly/Inventory/Updates.pdf'))
           CFMDEL(*YES) TOUSRID(INV320 REPORT)
```

Email Address Formats

Gumbo Mail supports the full range of email address formats, including route specification. 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 mail box mali@acme.com.

From (originator) Address

Gumbo Mail uses the following steps to determine the From (originator) address that appears in the generated email.

- If one of the special values is not used and an email address is entered on the From (originator) (FROM) parameter this value is used.
- If the user profile implied by a special value specified on the FROM() parameter 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 a special value specified on the FROM() parameter is enrolled in the system distribution directory and the entry does not contain an email address an i5/OS style address is generated in the form: usrid?address@host.domain.
- If the user profile implied by a special value specified on the FROM() parameter 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 from (originator) address on the out going email without retying it each time you should add or update a system distribution directory entry for each sending user profile.

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 i5/OS 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'))
```

Using Distribution Lists

There are two choices for addressing mail created by Gumbo Mail, direct SMTP addressing and distribution lists addressing using the system distribution directory. With direct SMTP addressing, you enter the recipient's email address on the To (recipient) parameter. No additional addressing set up is required, making this a good choice for impromptu sending to SMTP recipients. With distribution list addressing, you can set up lists of recipients that can be maintained independently of the programs that use the lists.

Using i5/OS distribution lists and system distribution directory requires additional set up and is the subject of the remainder of this section.

i5/OS Distribution lists are used to create named groups of directory entries from the system distribution directory. By sending to a distribution list, you send to each entry on the list.

i5/OS's system distribution directory can contain addressing information for users. In essence you store the user's email address in a directory entry. Directory entries can be created for users who are local to the System i (have an i5/OS user profile) and for users who are remote (do not have an i5/OS user profile). Local users can receive their mail on the System i using i5/OS's POP server or from a remote mail application such as Exchange.

To add a directory entry for local user MYUSER who has a user profile on the System i MYSYSTEM 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 i5/OS run:

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

Note: If the user already has a directory entry, change it by running:

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

To add a directory entry for a remote user who will receive email mail from the System i run the following command (for this example assume the user's email address is johnp@acme.com):

```
ADDSDIRE 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 i5/OS user profile run the following command (for this example assume the user's email address is suej@acme.com):

```
ADDSDIRE 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.

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:

```
ADDSDSTLE 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

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')
...
```

```
CHGVAR VAR(&MSG) +  
      VALUE('First line.' *CAT &CRLF *CAT 'Second line.')  
      ...
```

The resulting message is:

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

In Cobol, a similar result can be had using the hexadecimal literal:

```
X"0D25"
```

Digitally Signing The Message

Email produced by Gumbo Mail can be, optionally, 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 CHGSM2DFT 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 i5/OS's Digital Certificate Manager (DCM). DCM is option 34 of i5/OS. 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, goto the iSeries Information Center (<http://www.iseries.ibm.com/infocenter>).

Accessing Files In The Integrated File System

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

- Accessing the file from a PC using i5/OS's support for Windows Network Neighborhood (NetServer).
- Creating the file directly on a Windows machine using the IFS's QNTC file system.
- Transferring the file using FTP from a PC.
- Transferring the file using FTP from i5/OS.
- Accessing the file from a PC using iSeries Access.

Windows Network Neighborhood (NetServer)

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

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

Follow these guidelines to get your System i set up to use NetServer. These instructions assume that you do not have access to iSeries Navigator support. Whenever possible, you should use iSeries Navigator.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Note: server-name is the system name of NetServer on System i, and Sharename is the name of the file share you want to use.

5. Click OK.

Alternately you can use Network Neighborhood to access the share:

1. Open Windows Network Neighborhood.
2. Open QSYSTEM1 (Where QSYSTEM1 is the server name of NetServer on System i).
3. Select a file share.

QNTC File System

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

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

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

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

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

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

FTP Using PC

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

Note: [PC] denotes an operation performed on your PC. [i5] denotes an operation performed on your System i.

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

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

2. [PC] Choose Start > Programs > Accessories > Command Prompt to open a command prompt (DOS session).
3. [PC] Open an FTP connection to the System i by running (use your system's name or IP address):

```
FTP system_name
```

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

```
binary
```

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

```
quote site namefmt 1
```

7. [PC] Retrieve the file by running:

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

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

```
quit  
exit
```

For more details see Networking topic in the iSeries Information Center at <http://www.iseries.ibm.com/infocenter>.

FTP Using i5/OS

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

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

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

2. Add the following statements to your program:

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

For more details see Networking topic in the iSeries Information Center at <http://www.iseries.ibm.com/infocenter>.

iSeries Access

iSeries Access includes software that connects to the System i and makes the integrated file system available to the PC. For more information see iSeries Access topic in the iSeries Information Center at <http://www.iseries.ibm.com/infocenter>.

Chapter 6 Commands

What's In This Chapter

This chapter describes the control language (CL) commands supplied by Gumbo Mail. 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.

Change Gumbo Mail Authorization (CHGSM2AUT) Command

Where allowed to run: All environments (*ALL)

Threadsafes: No

The Change Gumbo Mail Authorization (CHGSM2AUT) command changes the authorization code for Gumbo Mail. The command is used to extend a demonstration period or to permanently authorize Gumbo Mail for a system or a partition.

Parameters

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

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.

Examples

Example 1:

```
CHGSM2AUT AUTH(01234567)
```

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

Example 2:

```
CHGSM2AUT 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.

Change Gumbo Mail Default (CHGSM2DFT) Command

Where allowed to run: All environments (*ALL)

Threadsafe: No

The Change Gumbo Mail Default (CHGSM2DFT) command changes values used by Gumbo Mail to control processing and other activities.

Parameters

Keyword	Description	Choices	Notes
SGNKEY	Signing key	Single values: *SAME , *NONE Other values: <i>Element list</i>	Optional, Positional 1
	Element 1: Application ID	<i>Character value</i>	

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 i5/OS'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.

Examples

Example 1:

```
CHGSM2DFT  SGNKEY (CUSTOMERRESPONSE)
```

This command changes the Signing key to the Application ID with name "CUSTOMERRESPONSE". Unless overruled on the GSENDMAIL command, all email sent will be signed using this certificate.

Example 2:

```
CHGSM2DFT  SGNKEY (*NONE)
```

This command changes the Signing key to *NONE which suppresses default signing of email.

Check Gumbo Mail Authorization (CHKSM2AUT) Command

Where allowed to run: All environments (*ALL)

Threadsafe: No

The Check Gumbo Mail Authorization (CHKSM2AUT) command executes Gumbo Mail'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: <i>Qualified object name</i>	Optional, Positional 1
	Qualifier 1: Message queue	<i>Name</i>	
	Qualifier 2: Library	<i>Name</i> , *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:

```
CHKSM2AUT
```

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

Example 2:

```
CHKSM2AUT MSGQ (QSYSOPR)
```

This command executes Gumbo Mail'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.

Display Mail Log (DSPMAILLOG) Command

Where allowed to run: All environments (*ALL)

Threadsafe: No

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

Note: Mail journaling must be turned on. Only journal receivers in the current chain are searched.

Parameters

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

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 time and date

Element 1: Starting time One of the following specifies the starting time from which entries are shown. Entries logged 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 4 or 6 digits (hhmm or hhmmss) where hh = hours, mm = minutes, and ss = seconds. Hours, minutes and seconds must each be 2 digits; use leading zeros if necessary.
 - With a time separator, specify 5 or 8 digits where the time separator specified for your job is used to separate the hours, minutes, and seconds.

Element 2: Starting date One of the following specifies the starting date from which entries are shown. Entries logged 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 time and date

Element 1: Ending time One of the following specifies the ending time to which entries are shown. Entries logged 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. See start-date for the formats in which time can be entered.

Element 2: Ending date One of the following specifies the ending date to which entries are shown. Entries logged 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 whether the output from the command is shown at the requesting display station or printed with the job's spooled output.

`*` Output requested by an interactive job is shown on the display. Output requested by a batch job is printed with the job's spooled output.

`*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.

Gumbo Send Mail (GSENDMAIL) Command

Where allowed to run: All environments (*ALL)

Threadsafe: No

The Gumbo Send Mail (GSENDMAIL) command generates an email message and sends it to a recipient(s).

Parameters

Keyword	Description	Choices	Notes
TOSMTPNAME	To (recipient)	Single values: <u>*CURRENT</u> , *NONE Other values (up to 300 repetitions): <i>Element list</i>	Optional, Positional 1
	Element 1:	<i>Character value</i>	
SUBJECT	Subject	<i>Character value</i> , <u>*NONE</u>	Optional, Positional 2
MSG	Message	<i>Character value</i> , <u>*NONE</u>	Optional, Positional 3
OBJ	Objects	Single values: <u>*NONE</u> Other values (up to 64 repetitions): <i>Element list</i>	Optional, Positional 4
	Element 1: Name	<i>Path name</i>	
	Element 2: Send as	*NOTE, <u>*ATTACH</u> , *TEXTPLAIN, *TEXTHTML, *ATTACHPDF, *ATTACHPS	
CC	Cc (carbon copy)	Single values: <u>*NONE</u> Other values (up to 300 repetitions): <i>Element list</i>	Optional, Positional 6
	Element 1:	<i>Character value</i> , *CURRENT, *USRID	
BCC	Bcc (blind carbon copy)	Single values: <u>*NONE</u> Other values (up to 300 repetitions): <i>Element list</i>	Optional, Positional 7
	Element 1:	<i>Character value</i> , *CURRENT, *USRID	
FROM	From (originator)	<i>Character value</i> , <u>*CURRENT</u>	Optional, Positional 8
CFMDEL	Confirmation of delivery	<u>*NO</u> , *YES, *OBS, Y, N, O	Optional, Positional 9
REPLYTO	Reply to	Single values: <u>*NONE</u> Other values (up to 300 repetitions): <i>Element list</i>	Optional, Positional 10
	Element 1:	<i>Character value</i> , *CURRENT, *USRID	
CHRENC	Character encoding of mail	*UTF8, *ISO88591, *ISO88592, *ISO88595, *ISO88596, *ISO88597, *ISO88598, *ISO88599, *BIG5, 1208, 819, 912, 915, 1089, 813, 916, 920, 950	Optional, Positional 11
SGNKEY	Signing key	Single values: <u>*DEFAULT</u> , *NONE Other values: <i>Element list</i>	Optional, Positional 12
	Element 1: Application ID	<i>Character value</i>	
HDRFLD	Header field	Single values: <u>*NONE</u> Other values (up to 32 repetitions): <i>Element list</i>	Optional, Positional 13
	Element 1:	<i>Character value</i>	
TOUSRID	To (distribution list)	Single values: <u>*NONE</u> Other values: <i>Element list</i>	Optional, Positional 5
	Element 1: User ID	<i>Character value</i>	
	Element 2: Address	<i>Character value</i>	

To (recipient) (TOSMTPNAME)

Specifies the e-mail address(es) to which the e-mail is sent. CHAR(128)

Single values

***CURRENT** 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.

***NONE** An email address is not specified.

Other values (up to 300 repetitions)

email-address Specify the email address of the recipient.

Subject (SUBJECT)

Specifies the subject for the e-mail. CHAR(60)

***NONE** No subject is included in the email.
subject Specify the subject of the email.

Message (MSG)

Specifies a message to include in the e-mail. CHAR(5000)

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.

***NONE** This parameter does not place a message in the email.
message Specify the message placed in the email.

Objects (OBJ)

Specifies the path name of the object to send. A maximum of 64 path names can be specified.

For more information on specifying path names, refer to "Object naming rules" in the CL concepts and reference topic in the iSeries Information Center at <http://www.iseries.ibm.com/infocenter>. CHAR(5000)

Single values

***NONE** No objects are sent.

Element 1: Name

'object-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.

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.

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.

Cc (carbon copy) (CC)

Specifies the e-mail 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.

***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 parameter allows lower case data, however this value must be specified all UPPER CASE.

email-address Specify the email address to receive a copy.

Bcc (blind carbon copy) (BCC)

Specifies the e-mail 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.

***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 parameter allows lower case data, however this value must be specified all UPPER CASE.

email-address 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).

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

email-address 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 don't understand the standard "Disposition-Notification-To" supplied by *YES.

Reply to (REPLYTO)

Specifies the e-mail address(es) to which replies should be sent when replies should go to an address other than the From (originator) (FROM) parameter or should go 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.

***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 parameter allows lower case data, however this value must be specified all UPPER CASE.

email-address Specify the email address to which replies should be directed.

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 RFC 2279 (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).

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 i5/OS's Digital Certificate Manager.

*DEFAULT	The certificate previously entered using the CHGSM2DFT command is used.
*NONE	No signing operation is performed.
<i>application-id</i>	Specify the application identifier to use in the signing operation.

Header field (HDRFLD)

Specifies fields that are inserted directly into the header of the generated email. No editing or inspection is performed. You must specify the header field exactly as it is to appear in the the email, specifically it must be syntactically correct as described in RFC 5322 "Internet Message Format" 2.2 Header fields. See <http://tools.ietf.org/html/rfc5322#section-2.2> for details. The data provided is converted to the encoding of the email and CRLF is appended to the header field inserted. Improper use of this parameter will render the generated email invalid and undeliverable.

Single values

*NONE	This parameter does not place header fields in the email.
--------------	---

Other values (up to 32 repetitions)

<i>character-value</i>	Specify the header field inserted into the email.
-------------------------------	---

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.
--------------	---

Element 1: User ID

<i>character value</i>	Specify the user ID (DEN) of the network user. CHAR(8)
-------------------------------	--

Element 2: Address

<i>character value</i>	Specify the address (DGN) of the network user. CHAR(8)
-------------------------------	--

Examples

Example 1:

```
GSENDMAIL    TOSMTPNAME((jim@acme.com))
              SUBJECT('Weekly Status Report')
              OBJ('/Reports/Weekly/Inventory/Status.pdf')
              ('/Reports/Weekly/Inventory/Updates.pdf')
              BCC((sue@acme.com)) CFMDEL(*YES)
```

This command sends the files Status.pdf and Updates.pdf, both located in directory /Reports/Weekly/Inventory, to jim@acme.com. A blind copy is also sent to sue@acme.com. The message contains a subject and short message and a delivery confirmation is requested.

Example 2:

```
GSENDMAIL    SUBJECT('Weekly Status Report') +
              MSG('Attached is your weekly status report.') +
              OBJ((Status.pdf)) +
              TOUSRID(INV320 REPORT)
```

This command sends file Status.pdf located in the job's current directory to the distribution list INV320 REPORT. A subject and short message are included.

Error messages

Parameter dependencies

A To (recipient) or a network user id must be specified.

A To (recipient) or a network user id can be specified, but not both.

Restart/Purge Local Mail (INZLOCAL) Command

Where allowed to run: All environments (*ALL)

Threadsafe: No

The Restart/Purge Local Mail (INZLOCAL) command ends and restarts i5/OS 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 or not the SMTP server is restarted.

*YES 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 or not the SMTP server is purged during the restart.

Note: Clear means that i5/OS generated SMTP mail will be deleted. If you aren't sure, select *NO.

*NO Existing messages are not cleared.
*YES Existing messages are cleared.

Restart MSF server (MSF)

Specifies the whether or not the MSF server is restarted.

*YES 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 or not 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 aren't sure, select *NO.

*NO 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) Command

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 System 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.
remote-system 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 router under test, bypassing all of i5/OS's mail machinery. This makes it is easier to determien if a mail delivery problem is most likely caused by the mail router or by i5/OS's configuration.

***NONE** An email address is not specified.
email-address 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).
email-address Specify the email address to use.

Authentication username (AUTHSRNAM)

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

***NONE** Authentication is not performed.
user name Specify the user name to send to the remote system for authentication.

Authentication password (AUTHPWD)

Specifies the password used to authenticate with the the remote system.

password 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.

port-number 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, the address must be enclosed in apostrophes.

character-value Specify the internet address of the remote system. If the internet address is entered from a command line, the address must be enclosed 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.

Verify/Set Up Local SMTP (VFYLOCAL) Command

Where allowed to run: All environments (*ALL)

Threadsafe: No

The Verify/Set Up Local SMTP (VFYLOCAL) command verifies or sets up SMTP on the local system.

Parameters

Keyword	Description	Choices	Notes
SETUP	Make changes to system	*YES, *NO, Y, N	Optional, Positional 1

Make changes to system (SETUP)

Specifies the whether or not 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:

```
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.

Verify/Set Up Mail Router (VFYROUTER) Command

Where allowed to run: All environments (*ALL)

Threadsafe: No

The Verify/Set Up Mail Router (VFYROUTER) command verifies or sets up the a remote mail router for use by the local system.

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/Set Up 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.

remote-system 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, the address must be enclosed 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.

internet-address Specify the internet address to use.

Make changes to system (SETUP)

Specifies the whether or not 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 System i.

Error messages

Parameter dependencies

MSU7011 RMTSYS(*INTNETADR) and INTNETADR(*RMTSYS) are mutually exclusive.

Chapter 7 Trouble-Shooting

What's In This Chapter

This chapter provides information and procedures useful for correcting or reporting Gumbo Mail 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.

General Trouble-Shooting

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

- Check the messages in your job log:
 - Run the DSPJOBLOG command.
 - Press F10 to display detailed messages.
 - Locate the messages related to the error.
 - Place your cursor on each message in turn and press F1.
 - 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 sections 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	i5/OS 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 3 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 completely removing the product then re-install the product by performing the following:

1. Delete the licensed program by running:

```
DLTLICPGM LICPGM(2A55SM2) RLS(*ALL)
          OPTION(*ALL)
```

Note: It is okay if this fails with diagnostic CPD3D91 "Product 2A55SM2 option *ALL release *ALL not installed."

2. Delete the product's library by running:

```
DLTLIB LIB(GUMBOMAIL)
```

Note: It is okay if this fails with escape CPF2110 "Library GUMBOMAIL not found."

3. Delete the product's directories by running:

```
RMVDIR DIR('/Gumbo/ProdData/2A55SM2/doc') RMVLNK(*YES)
RMVDIR DIR('/Gumbo/ProdData/2A55SM2/tmp') RMVLNK(*YES)
RMVDIR DIR('/Gumbo/ProdData/2A55SM2') RMVLNK(*YES)
```

Note: It is okay if these fail with escape CPFA0A9 "Object not found. ...". But if any fail because a directory is not empty, delete the contents using WRKLNK.

If there are no other Gumbo products installed:

```
RMVDIR DIR('/Gumbo/ProdData')
RMVDIR DIR('/Gumbo')
```

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

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

Note: This takes several minutes depending on machine size.

5. Install the product according to the instructions in the Installation chapter.
6. Enter your authorization code.

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 an System i connected to a LAN with the post office (a.k.a. mail router) on a LAN attached PC running Exchange, Notes or Groupwise with or without a connection to the internet at large. At the "average" installation this is the first application to generate email from the System i. Some of the entries in this section may not apply to your situation.

- Source Of Problem Is Unknown

Symptom

The send operation runs to completion but no mail arrives.

Cause

The problem may be with the mail router or with i5/OS, but the source is unknown.

Solution Run PINGMAIL to generate a test message to your email address and directly deliver it to the mail router by passing i5/OS's mail machinery entirely:

Note: Substitute the name of your mail router for the value "mail_router" and substitute your email address for the value "you@domain.com" in the following command.

```
PINGMAIL RMTSYS(mail_router)
          SMTPNAME(you@domain.com)
```

If you receive the test message, the mail router is working correctly and an i5/OS 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 mail router. You may be able to get an indication of the problem by reviewing the SMTP conversation which appears in your joblog. Run DSPJOBLOG, hit F10 and page back for details.

- i5/OS Servers Are Down

Symptom The send operation runs to completion but no mail arrives.

Cause The i5/OS servers responsible for mail delivery may be down, particularly if the System 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)
```

- Mail Router Is Not Processing Mail

Symptom The send operation runs to completion but no mail arrives.

Cause The mail router responsible for mail delivery may be down, or not accepting mail from i5/OS.

Solution Rerun VFYROUTER to verify that the mail router is up and running:

```
VFYROUTER SETUP(*NO)
```

If mail router verification fails, run:

```
VFYROUTER SETUP(*YES)
```

- Mail Router 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 has not been assigned to your directory entry and the mail router doesn't like the "funny" address i5/OS 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 the you are a local Domino for i5/OS user substitute MSFSRVLVL(*DOMINO) for MSFSRVLVL(*SYSMS).

- SMTP Servers Require Reinitialization

Symptom The send operation runs to completion but no mail arrives.

Cause i5/OS's SMTP servers may need to reinitialize. This is undocumented but our experience and discussions with i5/OS's SMTP architect confirm this.

Solution Reinitialize i5/OS'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 i5/OS's SMTP server may contain dead letters or other junk that it can not deliver. This can be the result of previous attempts to set up mail on the system.
Solution Clean out i5/OS'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) SMTTPURGE (*YES)
MSF (*YES) MSFPURGE (*YES)
```

- Mail Server Framework Is Reporting Errors

Symptom The send operation runs to completion but no mail arrives.
Cause i5/OS'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:

- Work with active jobs by running the following command:

WRKACTJOB
- Page down to the QSYSWRK subsystem.
- Locate the job or jobs with the name QMSF and repeat the following steps for each job.
- Display the job by using option 5 and pressing enter.
- Display the job log by selecting option 10 and pressing enter.
- Display detailed messages by pressing F10.
- 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).
- Display detailed information for each additional message by placing your cursor on the message and pressing F1.
- Take any corrective action specified in the messages.
- 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 i5/OS'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:

- 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).

- Page down to the end of the list of spooled files.
- 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).
- For each recent job log repeat the following steps:
- Display the job log by using option 5 and pressing enter.
- Review the job log for diagnostic and escape messages.
- Take any corrective action specified in the messages.
- 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

i5/OS's SMTP server jobs may be unable to process mail and are reporting errors.

Solution

Review job logs for the SMTP server jobs:

- Work with active jobs by running the following command:

```
WRKACTJOB
```

- Page down to the QSYSWRK subsystem.
- Locate the 4 SMTP server jobs with names that start with QTSMTP*. Repeat the following steps for each job.
- Display the job by using option 5 and pressing enter.
- Display the job log by selecting option 10 and pressing enter.
- Display detailed messages by pressing F10.
- 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).
- Display detailed information for each additional message by placing your cursor on the message and pressing F1.
- Take any corrective action specified in the messages.
- See the SMTP Specific Problems section of this chapter.

- SMTP Servers Are Ending Abnormally

Symptom

The send operation runs to completion but no mail arrives.

Cause

i5/OS's SMTP server jobs may be unable to process mail and are ending abnormally.

Solution

Review job logs for the SMTP server jobs:

- 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).

- Page down to the end of the list of spooled files.
- 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).
- For each recent job log repeat the following steps:
- Display the job log by using option 5 and pressing enter.
- Review the job log for diagnostic and escape messages.
- Take any corrective action specified in the messages.
- See the SMTP Specific Problems section of this chapter.

MSF Specific Delivery Problems

This sections describes problems, causes, and solutions specific to i5/OS'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

i5/OS'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:

- Run the WRKLNK command and locate the QTCPTMM directory.
- Display QTCPTMM's contents using option 5.
- Verify that subdirectories ATTABOX, ENCODE, MAIL, SMTPBOX and TMP exist.
- If directories are missing continue with this procedure otherwise end of procedure.
- Use the DLTLICPGM command to remove the TCP/IP Utilities.
- 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

i5/OS's MSF jobs stop processing mail when amount of disk space used rises above a set percentage. i5/OS is shipped with this value set to 90%.

Solution

Either free disk space by deleting unused items or bump the threshold value with this procedure:

- Run the STRSST command and select option 3 Work with disk units.
- Select option 2 Work with disk configuration.
- Select option 3 Work with ASP threshold.
- Use 1=Select for the appropriate ASP (usually ASP 1).
- Press F1=Help to review help for the Change Storage Threshold display.
- Change the ASP threshold to 95% or what ever is a comfortable value for your installation.

SMTP Specific Delivery Problems

This sections describes problems, causes, and solutions specific to i5/OS's SMTP servers.

- SMTP Retries Set To Zero

Symptom The send operation runs to completion but no mail arrives, or mail arrives for awhile then stops until the next IPL.
Cause The mail router is periodically slow or unavailable and i5/OS's SMTP attributes for retries are set too low or set to zero.
Solution Increase the retry values to give the mail router more chances at fielding the incoming mail:

- Prompt the CHGSMTPA command.
- Increase the number of retries for the retries by minute parameter.
- Increase the number of retries for the retries by day parameter.
- Press enter.

- Multiple Garbled Email Messages Arrive

Symptom Multiple messages arrive for a send operation and the messages are garbled.
Cause i5/OS'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 i5/OS's QUTCFFSET or QTIMZON system values have not been set.
Solution See Manual SMTP Steps You May Need To Perform section of the Set Up chapter for instructions to correct these values.

Appendix A Processing Descriptions

What's In This Appendix

This appendix provides detailed descriptions of the processing performed by Gumbo Mail's 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 Mail Router Verification
- Processing Performed During Mail Router Set Up

Processing Performed During SMTP Verification

The following verification steps are performed by the Verify/Set Up 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 SMTP has been installed on the system.

The QSYSWRK subsystem is checked to insure that it contains a routing entry with compare data of SMTPROUT. If the routing entry is found then SMTP has 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 i5/OS 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 QTCPPIP). If job is active then TCP is active.

- Verify that TCP loopback is operating correctly.

The TCP interfaces are searched to locate the *LOOPBACK internet address. The *LOOPBACK interface is started if it is not active and its internet address is PINGed to verify that TCP is operating correctly.

- If the *LOOPBACK interface is not found, verification fails.
- If the *LOOPBACK interface is not active and can not be started, verification fails.
- If the *LOOPBACK interface can not be PINGed, verification fails.

The *LOOPBACK interface is ended if it was started by the verification program.

- Verify that a TCP interface is defined.

The TCP interfaces are searched to locate one or more internet addresses (excluding *LOOPBACK).

- If no interfaces are found, verification fails.
- Verify that active TCP interfaces are reachable.

The TCP interfaces are searched to locate one or more internet addresses (excluding *LOOPBACK). Each interface is contacted (PINGed) to verify the connection.

- If an interface is not active, verification fails.
- If an interface can not 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.
 - Retrieve the host and domain names for this system.

If the host name is blank, verification fails.

- Verify TCP/IP connection to the host name.

If the host is contacted, verification is complete and no further processing is performed.

- Verify TCP/IP connection to the host.domain name.

If the host.domain name can not be contacted, verification fails.

- Verify that message splitting has been turned off.

The current setting can not be retrieved so no test is performed and it is assumed that splitting has not been turned off yet.

After all test are completed, a message summarizing the results is issued.

Processing Performed During SMTP Set Up

The following set up work is performed by the Verify/Set Up 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 can not perform the installation.
- If SMTP has not been installed on the system.
 - Manual intervention is required to install SMTP. Automatic set up can not perform the installation.
- If QSMTPQ distribution queue is not found.
 - Create the distribution queue using the Add Distribution Queue command:

```
ADDSTQ      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 can not perform the change.
- If the system distribution directory entry can not be searched.
 - The directory is changed to allow searches using the Change System Directory Attributes command:

```
CHGSYSDIRA  ALWSCH(*YES)
```

- If the i5/OS 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 can not be contacted.

Manual operation is required to correct the problem. If the interface can not be contacted because it is not active, start the interface using the STRTCPIFC command.

- If the SMTP server is not active.
 - Start the SMTP server using the STRTCPSVR command:

```
STRTCPSVR  SERVER (*SMTP)
```

- If the host's IP address can not be reached by SMTP.
 - 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.

- If multiple TCP interfaces are found, set up fails.

Manual operation required. Add this system's name to i5/OS's host table using the ADDTCPHTE command.

- If no TCP interfaces are found, set up fails.

Manual operation required. Add a TCP interface using the ADDTCPIFC command.

- 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.
 - 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.

Processing Performed During Mail Router Verification

The following verification steps are performed by the Verify/Set Up Mail Router (VFYROUTER) 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 router.
 - 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.

- Retrieve currently configured mail router name and IP

- Resolve internet address parameter.

If a special value was specified, it is resolved. If it can not be resolved, verification fails.

- 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.

- Edit remote system and internet address IP.

If the IP of the remote system is different than the internet address, verification fails.

- Edit remote system and internet address names.

If the name of the internet address is different than the remote system name, verification fails.

- Edit current mail router and internet address IP.

If the IP of the current mail router is different than 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 i. If it is not, verification fails.

- Verify that remote system can be located in the host table.

If a host table entry is required and not present, verification fails.

- Verify that the mail router is configured.

If the remote system is not configured as the mail router, verification fails.

After all test are completed, a message summarizing the results is issued.

Processing Performed During Mail Router Set Up

The following set up work is performed by the Verify/Set Up Mail Router (VFYROUTER) command when SETUP(*YES) is specified.

- If TCP is not active.
 - Start TCP using the STRTCP command:

```
STRTCP
```

- 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 i5/OS's configuration using option 13 of the CFGTCP menu.
 - If the internet address parameter can not be resolved.

Manual intervention required to correct the internet address parameter.
 - If the remote system parameter can not be resolved.

Manual intervention required to correct the remote system parameter.
- If the resolved names and IPs for conflicts.
 - If the remote system and internet address IPs are different.

Manual intervention required to correct the parameters.
 - If the remote system and internet address names are different.

Manual intervention required to correct the parameters.
 - If the current mail router and internet address IPs are different.

Manual intervention required. Either correct the parameters or remove the currently configured mail router by running the following command:

```
CHGSMTPA MAILROUTER (*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 i5/OS. The words you use to request this differ depending on the software running on the remote system:

 - For Microsoft's Exchange Server request that the "Internet Mail Connector" be configured and started.
 - For Lotus' cc:Mail request that the "Link to SMTP" be configured and started.
 - For all others request that the "SMTP gateway" be configured and started.
- If the remote system can not be located in the host table.

Add an entry using the Add TCP/IP Host Table Entry (ADDTCPHTE) command:

```
ADDTCPHTE INTNETADR(&INTNETADR) HOSTNAME((&RMTSYS)) +
          TEXT('Mail router added by Gumbo +
              automatic configuration')
```

- If the mail router is not configured.

Configure the mail router using the Change SMTP Attributes (CHGSMTPA) command:

```
CHGSMTPA MAILROUTER (&RMTSYS) FIREWALL (*YES)
```

Note: The FIREWALL() parameter is probably misnamed. When set to *YES, it instructs i5/OS to send all email through the mail router. When set to *NO, i5/OS tries to deliver the email directly. If this fails, it gives it to then gives it to the mail router.

After all steps are completed, a message summarizing the results is issued.