

# **ISO FAX**

## **Facsimile Management**

### *Reference Manual*

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# 1

## OVERVIEW

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IsoFax is sophisticated yet easy-to-use facsimile application software for networked workstations and servers. IsoFax works in conjunction with internal or external fax modems to communicate with any Group-3 compatible facsimile device.

Using an integrated database approach to facsimile document management, IsoFax maintains address books and distribution lists, organizes faxes in the appropriate folders, and sorts documents for display. IsoFax creates cover sheets, automatically inserting the date, number of pages, recipient name, organization, and phone number. Because IsoFax seamlessly integrates text and graphics, you retain control over the exact appearance of your page, including the typeface, point size, and placement of illustrations. If you can display it, you can send it.

In addition to the underlying software that provides its faxing capability, IsoFax includes an easy-to-use interface for creating, sending, and managing faxes as well as a wealth of development tools for customizing your IsoFax installation.

This chapter describes IsoFax's features, the organization of this manual, and the conventions used in this manual.

---

## IsoFax Features

- Templates for automatically generated cover pages
- Archived incoming and outgoing faxes
- Distribution lists for broadcasting a single fax to multiple recipients
- Graphic import filters for TIFF, Sun Raster, PostScript, and other formats
- Simultaneous use of multiple modems
- Prioritization of faxes for transmission
- Print-to-fax capability from applications that print documents
- Forwarding of received faxes from server to clients
- Integrated recipient address book database
- Capability to convert ASCII text to Postscript
- Toolkit for integrating IsoFax functionality into other applications
- Accounting and billing records
- Least-cost routing across wide-area networks
- A variety of email-to-fax interfaces, including MIME
- Multiple fax queues
- Custom configurable fax server

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## How to Use this Manual

This manual is organized by audience. The first part focuses on the needs of system administrators and developers. The second part is for end users. The appendices provide further reference and troubleshooting information.

### Part I: For Administrators and Developers

The system administrator is responsible for installing, setting up, maintaining, and troubleshooting the IsoFax server. The chapters in Part I provide information and instructions for accomplishing those tasks. This section of the manual also describes the tools available for developing custom IsoFax information. Part I of this manual contains the following chapters:

- Chapter 2, *Installation*, explains the procedures for connecting fax modem hardware and installing IsoFax software. This chapter also leads you through license validation, testing the software setup, and sending your first fax.
- Chapter 3, *Server Configuration*, describes how to custom configure the IsoFax fax server:
  - Setting the ISOFAXHOME environment variable.
  - Understanding fax server dynamic variables.
  - Customizing the fax server by starting *faxd* with a configuration file containing dynamic variables.
- Chapter 4, *IsoFax Servers*, gives an overview of the two software servers—the license server (*blserver*) and the fax server (*faxd*).
  - License and fax server functions.
  - Details of modem management.
- Chapter 5, *Modem Configuration*, explains how to declare additional modems, and how to customize them.
- Chapter 6, *User Configuration*, explains how to assign a unique profile for each user. This allows the system administrator to control and customize each client's behavior.
- Chapter 7, *The FaxInbox*, describes how incoming faxes are forwarded from the server to client programs.

- 
- Chapter 8, *Fax Toolkit*, describes the various utilities for composing, queuing, viewing, and printing faxes, as well as for address-book access. Advanced users and application developers will use the API tools for building custom applications.
  - Chapter 9, *IsoFax Administration*, describes the various IsoFax log files as well as the following administrative tasks:
    - Installing and updating fax software.
    - Adding IsoFax users.
    - Maintaining IsoFax environment variables, directories, and files (including log and license files).
    - Fax naming.
    - Restricting user access.
    - Least-cost routing.
    - Implementing site-specific security and accounting procedures.
    - Setting up multiple outgoing and incoming queues.
    - Monitoring the fax queue.
    - Tips on how to start the software servers automatically.
  - Chapter 10, *Fax On Demand Option*, describes the operation of the programmable fax-back option.

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## Part II: For IsoFax End Users

Unlike the IsoFax administrator, most IsoFax end users need to know only how to send and receive faxes. Advanced users will want to create their own cover sheets, send email via fax, and “fax-print” from their favorite applications. Part II of this manual provides information and instructions for those tasks.

Part II of this manual contains the following chapters:

- Chapter 11, *IsoFax/MX*, describes the IsoFax client tool for sending and receiving faxes in a Unix Motif environment. If you have used IsoFax Xfaxtool in an OpenWindows environment, you will find some similarities with IsoFax/MX, but also many differences. Read this chapter to learn the new user interface, as well as the new features in IsoFax/MX.
- Chapter 12, *FaxTerm*, describes the text-based IsoFax Unix client used in a terminal emulator window. FaxTerm provides menu-access to IsoFax’s capabilities and allows text data-entry for fax composition and transmission.
- Chapter 13, *Email and Isofax*, explains how to compose and send faxes with various electronic mail programs.
- Chapter 14, *Creating Custom Cover Sheets*, explains how to create and customize fax cover sheets.
- Note: the Windows End User Interfaces are *not* discussed in this manual.

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## Appendices

The appendices contain reference and troubleshooting information about IsoFax.

- Appendix A, *PostScript Interpreter*, describes installation, available fonts, and error messages for the PostScript language interpreter supplied with IsoFax.
- Appendix B, *Troubleshooting*, lists error messages and gives an appropriate response to each. Use this section to solve problems you may encounter.
- Appendix C, *Bristol File Formats*, gives the specification for the Bristol fax file format.

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**Note:** A separate manual, *IsoFax WinClient*, describes sending and receiving faxes on a computer running Microsoft Windows or Windows NT.

## Conventions

This manual uses the following font and format conventions:

- Command line input and output are shown in constant width font:  

```
% tip -19200 /dev/ttya
```
- Commands (including switches), when they appear in body text, exactly as a user would type them, are italicized. For example, *isofax\_mx*, *faxd*, *sendfax*.
- Names of the IsoFax client tools, when mentioned in body text, appear with initial caps and no italics. For example, IsoFax/MX, FaxTerm.
- Filenames and variables are printed in italics. For example, *blserver\_log*.
- Menu options, window names, and buttons appear with initial caps and no italics. For example, Fax Browser, Print, Send.

# 2

## INSTALLATION

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This chapter guides you through a simple, *first-time* installation of IsoFax. The goal is to have you sending and receiving faxes as soon as possible. When you are confident in your understanding of IsoFax, we assume that you will create a more sophisticated *final* installation—installing multiple modems, using port expanders, installing multiple servers, running the license server on another machine, and so forth. (Instructions for more complicated installations are given in later chapters.) The installation described in this chapter includes:

- A single AT-style modem attached to a *local* serial port,
- A *single* IsoFax fax server, and
- The Bristol license server running on the *same* machine as the fax server.

The first-time IsoFax installation includes the following steps, which are described in detail in this chapter:

- Unpacking the Bristol IsoFax package.
- Unloading the software distribution.
- Obtaining your license validation code.
- Generating a license file.
- Selecting and connecting a fax modem.
- Turning off logins (Unix only).

- 
- Declaring the modem in IsoFax.
  - Starting the Fax Server.
  - Sending your first fax.

## Unpacking the IsoFax Software

Before installing IsoFax, check the IsoFax package. You should have received at least the following:

- The Bristol Group License Agreement
- Media containing the software distribution
- Release Notes (Optional)
- Additional media and manual for any purchased IsoFax WinClient software

You should also have received one of the following:

- License Validation Sheet
- License Tracking Card

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**Important:** If any items are missing, please contact The Bristol Group's shipping department, at 415 925-9250.

## Unloading the IsoFax Software (Unix)

IsoFax UNIX software is distributed on CD ROM and, occasionally, magnetic tape. All distributions are in the *tar* (tape archive) format.

Because *tar* creates various directories during unloading, it is essential that the permissions on those directories be *wide open*—that is, *777*. To set those permissions easily, issue the following UNIX command before starting the installation:

```
% umask 0
```

Since this command changes permissions on all subsequent files and directories created, you will probably want to reset *umask* to its previous value after installing and testing IsoFax.

---

## Unloading the Bristol CD (Unix)

---

**Important:** *The CD format has changed beginning with IsoFax 9.0 It is no longer in tar format, but is a mountable HS format CD*

To unload the CD, first mount it, then make a directory to unload IsoFax into:

```
% mkdir /somewhere/isofax
% cd /somewhere/isofax
% tar xvf /cdrom/isofax/isofax_tarfile
```

where *cdrom* is the mounted CD-ROM file system, and *isofax\_tarfile* corresponds to your particular platform; usually *solaris\_isofax.tar*, *hpux\_isofax.tar*, or *aix\_isofax.tar*.

## Unloading a Bristol Tape (Unix)

The instructions for unloading the IsoFax distribution from a magnetic tape are listed on the tape label (typically, a sample *tar* command). To unload the software on a device name different from the one given in the example, simply change the device name.

## Installing the IsoFax NT Software

IsoFax NT software is distributed on CD-ROM. Installation is accomplished in customary Windows fashion with the SETUP.EXE program.

After inserting your CD-ROM into your drive, an instructional message will tell you how to launch the IsoFax installer. After it's been launched, a Wizard will take you through the balance of the installation..

## Wizard Dialogs (NT)

The installation program uses a wizard. Please follow the instructions shown in the installation wizard.

The first screen of the installation wizard is shown below:



*Figure 2-1. The wizard dialog box during IsoFax NT fax server installation.*

From this dialog click the Next button and follow the instructions to install.

---

## Obtaining Your License Validation Code

If you received a License Validation Sheet in your package, you already have a license validation code and you should skip directly to the section, "Generating a License File," on page 2-6.

---

**Important:** If you did not receive either a License Validation Sheet or a License Tracking Card, please contact The Bristol Group's shipping department, at 415 925-9250.

To obtain a license validation code, you must know the *hostid* or machine number of the computer on which the IsoFax license server is installed.

The procedures for obtaining a *hostid* or machine number differ among platforms. Complete these steps to obtain the *hostid* (or machine number) and the license validation code for your specific platform (SunOS, Solaris, HP-UX, AIX, and Windows-NT):

1. Open a command window on your system. Make certain that scrolling is *not* enabled.
2. Log on to the machine where you unloaded the IsoFax software and change to the IsoFax directory.
3. Find the *hostid* by entering the appropriate command for your operating system:

Operating System	Command
SunOS	% <code>hostid</code>
Solaris	% <code>showrev</code>
NT, AIX, HP-UX	% <code>getbristolid</code>

The *hostid*, a multi-character identification number, is displayed in the window. The number of characters in the *hostid* differs per platform: eight characters for Sun, NT, and HP-UX, and typically two, three, or four characters for AIX.

---

Important: For *Windows NT only*, the machine must have NetBEUI protocol installed with a lana0 Ethernet card.

4. Write the *hostid* in the appropriate field on the License Tracking Card.
5. Complete the License Tracking Card and fax it to The Bristol Group at the number given on the card.

The Bristol Group will fax back a License Validation Sheet containing the validation code required to generate a valid license file.

## Generating a License File

IsoFax requires a valid license file, *bristol\_licenses*. Unless you were emailed this file, you generate it by running the program *license\_tool* provided in the IsoFax distribution and entering the licensing information from the License Validation Sheet.

To generate a license file using *license\_tool*:

1. Open a command window on your system. On a Sun, make certain that scrolling is *not* enabled.
2. In the IsoFax directory, enter the following command:

```
% ./license_tool (Unix)
```

```
C:\ISOFAXSERVER> license_tool (NT)
```

The license validation form appears.

Complete all relevant fields *exactly* as they appear on the License Validation Sheet. Fields shown on the screen and not on the License Validation Sheet must contain the number 0 (zero).

The license validation form has the following fields:

Field	Description
License Server Host ID	The <i>hostid</i> of the machine that will run <i>blserver</i> (the license server). This field defaults to the machine on which you plan to run

---

	<i>license_tool</i> . If a different machine will run <i>blserver</i> , replace the contents of this field with its <i>hostid</i> .
Software Release	The release number of the software you are licensing. This field defaults to the release number of the <i>license_tool</i> program.
License Server Host ID	The <i>hostid</i> of the machine that will run <i>blserver</i> (the license server). This field defaults to the <i>hostid</i> of machine running <i>license_tool</i> .
Expiration Date	Press the spacebar to empty the Expiration Date, then enter the date shown on the License Validation Sheet. Type in the new date in <i>dd-mm-yy</i> format.
Individual License Keys	Type each of the licenses you received from The Bristol Group in a separate field. Enter a 0 (zero) in unused fields. <i>Unused fields cannot be blank.</i>
Validation Code	Fill in the 8-digit validation code you received from The Bristol Group. The code is a hexadecimal number composed of a unique combination of numbers 0 through 9 and may contain lowercase letters a through f.

---

4. (Unix only) When you have entered all the required information, you can press the backslash key (\) and use one of the following options:

Option	Description
c (continue)	Returns to the license fields. Press c to correct previous entries or to fill in additional information.

---

<i>g</i> (generate)	Generates the license file <code>bristol_licenses</code> . Press <i>g</i> after verifying that all the fields are properly completed.
<i>q</i> (quit)	Exits the <i>license_tool</i> program. Press <i>q</i> after you have generated the license file or whenever you want to exit the program.

---

5. Press *g* to generate the license file, then press *q* to quit the program.
6. With Windows NT, it's a good idea to check the license file at this point. In the same command window, type

```
C:\ISOFAXSERVER: blserver
```

If `blserver` doesn't exit in a few seconds, you can assume everything is OK, and move on. But first kill `blserver` with Control C.

## Selecting a Modem

Generally, IsoFax supports selected proprietary digital modem cards, plus all fax modems that adhere to the EIA/TIA 592 fax modem standard. Such modems are commonly referred to as Class-2 modems. However, not all Class-2 modems work equally well with IsoFax, since not all Class-2 modems meet the high-volume, high-quality faxing requirements of IsoFax users. At the time of this writing, The Bristol Group recommends *only* ZyXEL Class 2 fax modems. For a list of other modems that are known to work with IsoFax, please refer to the *README.modems* file or to the IsoFax release notes (if provided).

---

**Note:** If you are unsure about your modem, refer to *Troubleshooting* in Appendix B.

---

## Connecting a Serial Port Modem

This section explains how to connect facsimile modems to your workstation or server and how to connect the telephone line to the modem.

### What You Need

If you purchased the modem from The Bristol Group, your modem kit includes the components listed below. If you purchased your modem elsewhere, check that it has similar components.

- Fax modem
- Power cord with a transformer
- Modular telephone cable
- 25-pin modem cable

### Connecting to the Serial Port

It takes only a few minutes to connect a fax modem to a serial port.

---

**Important:** In this procedure, you select a serial port *on the back panel of your workstation*. Because this is a first-time installation, the goal is to have the fax server installed, configured, and working in a *standard* hardware environment. Do not try your first installation on an external serial port such as those on a networked-terminal server or a port expander; these types of installations have special requirements.

The steps on the next page are for EIA Class-2 external modems. Consult the *README.modems* file, the IsoFax release notes (if provided), and your modem's documentation for specific instructions on installing your model.

---

To connect a fax modem:

1. Select a free serial port on the back panel of the workstation. Twenty-five pin female D-shaped connectors are the norm, but 9-pin connectors are not uncommon.
2. Find the device name for the serial port you have selected. Device names are system-dependent and are usually embossed on the chassis near the serial-port connectors themselves. On Sun workstations, they are named *ttya* and *ttyb*. On HP 9000s they are usually named *tty00* and *tty01*. On IBM RS/6000, *tty0* and *tty1* are often used. PC Compatibles commonly use *COM1* And *COM2*.

---

**Note:** HP serial ports are often 9-pin connectors designed for driving terminals, not modems. In this case, you must obtain a special cable from HP.

3. Connect one end of the modem cable to the free serial port.
4. Connect the other end of the modem cable to the modem.
5. Secure both connectors with the built-in screws.
6. Connect the AC power pack to the modem's power socket and plug the transformer into an AC outlet.
7. Connect the modular telephone cable to the socket on the modem labeled line or wall. Do **not** use the socket labeled *Phone*.

---

**Note:** The other end of the telephone cable may be connected to any telephone socket that supports standard telephones. The line may be a direct external telephone line or an extension on a telephone system. Sockets for proprietary or dedicated telephones are not suitable. It is a good idea to test the line first by connecting a standard telephone to the line and placing a call. This also provides an opportunity to ascertain whether you need to dial "9 " first for an outside line.

8. Turn on the modem.

---

## Turning Off Logins (Serial port Unix modems only)

You must disable system logins on each port connected to a fax modem. The procedure to disable logins differs among operating systems; however, for each system you'll need to be logged in as root. (For current information on this subject, consult the file *README/README.disable.logins*.)

The following sections provide instructions for disabling logins on each of the supported platforms.

### Solaris

To disable the system login for the fax modem port under Solaris:

1. Determine the port monitor tag (*pmtag*) associated with *tty-name* using the following command:

```
% pmadm -l | grep tty-name |awk '{print $1}'
```

2. Use the *pmtag* to disable logins on *tty-name* with the following command:

```
% pmadm -d -p pmtag -s tty-name
```

For example, to turn off *zsmon* on *ttya*:

```
% pmadm -d -p zsmon -s ttya
```

---

## SunOS

To disable the system login for the fax modem port under SunOS:

1. Edit the file `/etc/ttytab` and change the status field (the fourth column) of the entry corresponding to `tty-name` to off.

For example, change:

```
ttya "/usr/etc/getty std.9600" unknown on local
```

to:

```
ttya "/usr/etc/getty std.9600" unknown off local
```

2. Have `init` reread `/etc/ttytab` by entering the following command:

```
% kill -1 1
```

## AIX

To disable the system login for the fax modem port under AIX:

- Use the `chdev` command:

```
% chdev -l tty-name -a login = 'disable'
```

For example, to disable logins on `tty0`:

```
% chdev -l 'tty0' -a login = 'disable'
```

---

## HP-UX

To disable the system login for the fax modem port under HP-UX:

1. Edit the file */etc/inittab* and change the action field (the third column) of the entry corresponding to *tty-name* to off.

For example, change:

```
a0:4:respawn:/etc/getty -h ttyd00 9600
```

to

```
a0:4:off:/etc/getty -h ttyd00 9600
```

2. Have *init* reread */etc/inittab* by entering the following command:

```
% init q
```

## Declaring a Modem for IsoFax

To declare a modem for IsoFax:

1. Look at the *modem declaration* near the top of the *MODEMS.info* file in your IsoFax directory. Either use a text editor or an HTML browser directed at the IsoFax server administration site.
2. For serial port modems, the default modem declaration contains the name of a serial device on your system, enclosed in square brackets; for example,

```
[ttya]
```

Edit this declaration if it does not agree with the serial port device where your modem is connected.

For Brooktrout modems, the default modem declarations contain the name of the Brooktrout channel in square brackets; for example,

```
[brooktrout0]
```

---

**Important:** Remember to retain the square brackets.

Note: Later on, you may want to refine these modem declarations, for instance to force a modem to be used for inbound faxing only.

---

## Starting the License and Fax Servers (Unix)

Once you have installed the software, generated a license file, connected the modem, turned off logins, and declared a modem, you must start the Isofax license and fax servers.

The first time the license and fax server are run, they create directories; therefore, the permissions on those directories must be *wide open*—that is, 777. To set those permissions easily, issue the following UNIX command before starting the servers:

```
% umask 0
```

Since you need these permissions only the first time you run the servers, we recommend resetting *umask* to its previous value.

To start the fax server:

1. Change directory to the IsoFax directory. Make sure that it contains the *bristol\_licenses* file created earlier.
2. Start the license server (*blserver*) in the background:

```
% blserver &
```

As *blserver* starts, it displays its version number and a list of the current licenses in the *bristol\_licenses* file.

3. Start the fax server (*faxd*) in the background:

```
% faxd &
```

As *faxd* starts, it displays the software's release and version numbers. It then displays a progress message, *Initializing ttys and modems*, followed by a status message showing the *tty name*, the kind of modem, and so forth.

The license server and the fax server are now running, ready to send faxes. If you receive error messages when starting either *blserver* or *faxd*, refer to "Testing the Modem," in Appendix B, *Troubleshooting*.

---

## Starting the License and Fax Servers (NT)

After you have installed the software, generated a license file, connected the modem, and declared a modem, the next task is to start the IsoFax license and fax servers. This is done with the IsoFax Service Manager.

You launch the IsoFax Service Manager by going to the Start button, which is usually in the lower left-hand corner of your desktop. Select “Programs,” and drag right to “IsoFax Server,” and finally to “IsoFax Service Manager,” or in some older releases “IsoFax Admin Tool.”

This pops up a dialog box titled “IsoFax Service Manager.” You should see that the fax server is installed, but not running, and the RPC Port Manager is both installed and running. To start the servers, click the Edit button to the right of the Fax Server check boxes. This will pop up another window “Fax Server.” The Installed box should already be checked. Now check the Running button, click Apply, and then OK. Unless you get a Warning or Error popup, your services have been successfully installed and started.

## Sending Your First Fax

You are now ready to complete the final IsoFax test: sending the first fax.

To send your first fax:

1. Make sure you are in the IsoFax directory and confirm the existence of the file *FIRST\_FAX*. This file contains a ready-to-send file in the Bristol fax format. For Unix type

```
% ls FIRST_FAX
```

For NT, type

```
C:\ISOFAXSERVER> dir FIRST_FAX
```

2. To fax this file, type the following command:

```
sendfax FIRST_FAX phone_number
```

---

where *phone\_number* is the number of the fax device to be called.  
Do not enter spaces or punctuation. If possible, use the number of a local fax device so that you can inspect the received fax.

---

**Note:** If you have to dial a 9 or some other digit to obtain an outside line, include it in the phone number, followed by the letter *W* to instruct the fax modem to wait for a second dial tone before dialing. For example, if the number is 555-1212, you would type *9W5551212*. For a long distance number, you do not need to include a 1 before the area code.

Track the fax by listening for a series of sounds. First you'll hear the modem dial the number, followed by the characteristic sounds of fax handshaking, then a high-pitched static as the fax image is transmitted, followed by hang-up.

3. Confirm that the fax was successfully transmitted by examining the fax log in the file *work/fax\_log* (NT: *work\fax\_log*). If possible, examine the received fax for quality.

# 3

## SERVER CONFIGURATION

---

Before you can configure IsoFax for your environment, you must have successfully completed the tasks covered in the preceding chapter: installing IsoFax, generating a valid Bristol license file, starting the Bristol license server *blserver*, starting the fax server daemon *faxd*, and sending a single test fax.

Although the basic setup described in Chapter 2 may be sufficient for your requirements, IsoFax lets you configure the software and hardware setup to best meet your users' needs. This chapter explains how to configure the fax server itself. It contains the following sections:

- Setting the ISOFAXHOME environment variable on your system
- Understanding fax server dynamic variables
- Customizing the fax server by starting *faxd* with a configuration file containing dynamic variables

---

## Setting the ISOFAXHOME Environment Variable

To simplify the location of configuration files and other components, the IsoFax programs use the ISOFAXHOME environment variable. For IsoFax to function properly, set this variable as described below for your particular shell environment.

Environment variables remain set only for the lifetime of the shell. To set this variable permanently and automatically either for individual users or across the entire system, see “Adding a New User” in Chapter 9, *IsoFax Administration*.

### C Shell Users

Type the following commands at a C shell prompt (in this example, the prompt is %):

```
% setenv ISOFAXHOME /path/to/isofax
% set path = ( ${path} ${ISOFAXHOME} )
```

Remember, environment variables remain set only for the lifetime of the shell.

### Korn and Bourne Shell Users

Type the following commands at a Korn or Bourne shell prompt (in this example, the prompt is \$):

```
$ ISOFAXHOME=/path/to/isofax
$ export ISOFAXHOME
$ PATH=${PATH}:${ISOFAXHOME}
```

### Windows NT Users

The installer should have set ISOFAXHOME for you. If you suspect otherwise, then from a Command Prompt window type:

```
C:\> set ISOFAXHOME=c:\path\to\IsoFax
C:\> set PATH=%PATH%;%ISOFAXHOME%
```

Please consult your NT documentation for how to permanently set this variable.

---

## Fax Server Dynamic Variables

The IsoFax fax server's two main jobs are to transmit faxes from the outgoing queue and to answer the phone and put incoming faxes into the incoming directory. Many of the details of these functions are governed by fax server variables, referred to as *dynamic variables*. The default values for these variables enable the fax server to run right out of the box in most cases.

The values of these variable may be changed by editing the configuration file *conf.info*, or with an HTML browser referencing the IsoFax server configuration site.

As the name implies, dynamic server variables can be modified to change the server's behavior while it is running. Dynamic fax server variables are kept in a configuration file, and are organized into the following general categories:

- Variables you're most likely to change first
- Fax server directories and hosts
- Success/Fail notification
- Miscellaneous server configuration
- System print command
- Print options for outgoing faxes
- DID configuration
- Security Control
- Called-number database management
- Auto-start FaxInbox
- Managing the growth of logs

---

Note: The dynamic variables are listed in this same order in the *conf.info* sample configuration file discussed in “Creating a Configuration File” on page 3-26.

---

## Variables You're Most Likely to Change First

This section describes variables you are most likely to change to customize IsoFax.

### Your Local Fax Number

The *local\_fax\_number* variable is the phone number the IsoFax server transmits to other fax machines during the handshaking process. You can include non-numeric characters in this string. Most Class-2 fax modems reject strings longer than 20 characters (the CCITT limit). For this reason, IsoFax truncates this variable at 20 characters.

The default is no value.

---

**Note:** Some modems reject non-numeric characters. If this occurs, IsoFax automatically filters the string according to CCITT specifications (numerals, space, and '+').

### Prefix for Outgoing Calls

The *dial\_prefix* variable is a string prepended to the dialed phone number. For example, if your phone system requires you to dial a 9 to get an outside line, include the number 9 in this variable. Similarly, to force the server to use pulse instead of tone dialing, this variable must include the letter *P*. Note that the prefix does not appear in the fax log.

The default is no value.

---

**Note:** To simplify operation on PBX systems, *dial\_prefix* is ignored if the phone number contains fewer than five digits. However, if *dial\_prefix* contains a P, pulse dialing is retained.

---

## Custom Page Header on Outgoing Faxes

The *header\_string* variable contains the message that appears at the top of each fax page. IsoFax recognizes the following escape sequences:

Escape	Function
<code>\Cnumber</code>	Insert Sender's company name. Force field to the length specified by <i>number</i> (defaults to 20)
<code>\d</code>	Insert date and time in fixed format; for example, "Sun Sep 16 01:03:52 1995 PDT"
<code>\D</code>	Insert internationalized date
<code>\T</code>	Insert internationalized time
<code>\p</code>	Insert page number
<code>\P</code>	Insert total number of pages
<code>\N</code>	Insert phone number dialed
<code>\rnumber</code>	Insert recipient name; force field to the length specified by <i>number</i> (defaults to 20)
<code>\any char</code>	Insert <i>any char</i> directly into the header text. For example, <code>\\</code> inserts a <code>\</code> into the header

---

In all fields followed by *number* the field is left-justified and right-padded with spaces up to a maximum length of *number*, which defaults to 20.

Internationalized time and date are dependent on your computer's "locale" setting. Specifying locale information is not necessary if the system default is acceptable. Refer to your Operating System manuals for more information on *locale* and *setlocale* behavior.

The default is `\ \d IsoFax Page \p of \P`. The single initial `\` preserves the line's leading blanks, which otherwise would automatically be stripped.

---

**Note:** To eliminate the page header completely, put a # as the first character of this variable.

---

## Prepend 1 to Long Distance Numbers

The *dial\_one* variable determines whether or not users must dial 1 before long distance numbers. If the variable is set to *YES* and the phone number is exactly 10 digits long and doesn't begin with 0, IsoFax prepends 1 to the dialed number. If the *dial\_prefix* variable string is non-null, that value is prepended before the 1. The 1 appears in the fax log.

The default value is *YES*.

## Auto Printing Incoming Faxes (Unix)

To use a printer that accepts the PostScript page description language, use the dynamic variable *iprinter*. If you have a fast PostScript printer or a slow communications link to a slow one, use *iprinter\_rl* for run-length compression.

To use a printer that accepts the PCL page description language, use the dynamic variable *iprinter\_hp*. In this case, the *shrink\_to\_fit* option to the *printer\_crop* dynamic variable is not supported. In addition, some PCL printers have a smaller printable area than PostScript printers, resulting in faxes with the bottoms chopped off.

---

**Note:** You can only configure one of the incoming printer variables (*iprinter*, *iprinter\_rl*, or *iprinter\_hp*). If you don't configure any incoming printer variables, auto printing of incoming faxes is not available. For an example of complex auto printing, see the *samples/iprinter\_script* located in the main directory of the IsoFax distribution.

The *iprinter* variable gives the printer name for printing incoming faxes, non-compressed. Use this variable if you have a slow postscript printer or a high-speed channel between your print server and the printer. For more sophisticated printing of incoming faxes, see "Print Options for Incoming Faxes," on page 3-17.

The default is no value.

## Auto Printing of Incoming Faxes (NT)

The *iprinter* variable determines whether incoming faxes are automatically printed. The possible settings for this variable are:

none

Don't print incoming faxes

---

<code>use_default_printer</code>	Use the printer currently selected in Print Manager.
<code>&lt;printer name&gt;</code>	Any <code>&lt;printer name&gt;</code> installed in Print manager.

The default is `use_default_printer`.

### TTY Open/Close Delay

The `open_delay` and `close_delay` numeric variables are required when using serial devices such as terminal servers that require delays between file opening and closing operations. The open delay occurs *before* the open, while the close delay occurs *after* the close. Delays are expressed in milliseconds. For example, terminal servers typically require open and close delays of 500 milliseconds.

The default is zero.

### Dialing Variables

This section describes the variables that govern how phone numbers are formed, dialed, and managed by the server.

#### Dialing Postfix

The `dial_postfix` provides a postfix (or suffix) to dialed numbers. The postfix does not appear in the fax log.

The default is no value.

---

## Phone Number Substitution

The *dial\_substitutes* variable recognizes a string in a phone number and replaces it with a substitution string.

For example, assume you are making calls from the 415 area code. If a fax phone number begins with 415, you would like to replace the area code with nothing, so the number dialed starts with the exchange. Setting this variable makes address books more portable from one geographic location to another, enabling easy sharing of address books between company branches in different area codes. (The number in your address book and the number on your cover page still show the 415.)

This variable accepts many substitution rules strung together on a single line:

```
dial_substitutes = lookforstring1 replacewithstring1:\
lookforstring2 replacewithstring2:\
lookforstring3 replacewithstring3:
```

---

**Note:** In this example, the \ characters are used to show one long file line on multiple screen lines. They are not supported in the actual configuration file.

The total length of the string must be less than 1000 characters. The *lookforstring* and *replacewithstring* are separated by a space. The line ends in a colon (:). ***The line cannot contain newlines, no matter how long it becomes.***

To remove a prefix from all numbers, simply include a *lookforstring* followed by a space and no *replacewithstring*. To add a prefix to all numbers, leave the *lookforstring* blank (which matches *all* numbers) followed by a *replacewithstring*. If there are several matches, substitution is performed on the first match.

The default is no value.

---

**Note:** Substitutions are performed *before* the *dial\_one*.

---

## Allow Multiple Simultaneous Calls to Same Number

The *allow\_duplicate\_dialing* variable (in installations with more than one modem) determines whether or not the fax server will *simultaneously* attempt to send faxes to the same phone number. Simultaneous calls to the same number ordinarily produce a busy signal for all but the first call. However, duplicate calls should be permitted when a single number rolls over to a bank of many fax machines.

The default is *NO*.

## Character Filter for Phone Numbers

The *dial\_filter* variable specifies valid telephone number characters other than digits. This variable should be changed only under very unusual circumstances. Telephone numbers are processed as follows:

- The numerals 0-9 are valid.
- The characters contained in *dial\_filter* are valid.
- Leading and trailing strings of white space or invalid characters are discarded.
- If *dial\_filter* contains the blank (space) character, strings of one or more white space or invalid characters are replaced by a blank; otherwise these strings are discarded.

To specify the blank character at the beginning or end of the *dial\_filter* string, enclose the string in quotes. . **Changes to this variable do not take affect until the fax daemon (*faxd*) is restarted.**

The default for *dial\_filter* is *-+W!,@#\*?*

---

## Fax Server Directories and Hosts

This section describes the variables that determine fax server directories and hosts. Note the following when reviewing and changing the values of these variables:

- Where default paths are given for variables in this section, they are relative to the ISOFAXHOME environment variable; if the ISOFAXHOME environment variable is not set, paths are relative to the directory where *faxd* is started. To change the default paths, you must enter absolute paths. See “Setting the ISOFAXHOME Environment Variable,” on page 3-2 for more information.
- None of the directories need to be remotely mountable.
- All directories except the one specified in the executables dynamic variable must be writable. All directories must be readable and executable.

### Executables

The *exec\_dir* variable specifies the directory where the fax server executables reside.

The default is the current directory.

### Fax Archiving

The *archive\_switch* variable indicates whether you wish to make archive copies of faxes, and, if so, which faxes you wish to archive. The possible values are described below.

Value	Description
<i>incoming</i>	Archive only received faxes
<i>outgoing</i>	Archive only sent faxes.
<i>both</i>	Archive both sent and received faxes

The default is no value.

---

## Directory for Archived Faxes

The *archive\_dir* variable specifies the directory in which incoming and outgoing faxes are archived. This directory may grow large very quickly. **Changes to this variable do not take effect until the fax daemon (*faxd*) is restarted.**

The default is no value.

## Working Directory

The *work\_dir* variable specifies the directory where the fax server *faxd* queues outgoing faxes, maintains log files, and so on. This directory can grow to several megabytes, depending on fax traffic. If multiple outgoing queues are in use, the directory name is formed from the *work\_dir* variable and the queue number (for queues two and higher). For information about multiple queues, refer to Chapter 7, *IsoFax Administration*. **Changes to this variable do not take effect until the fax daemon (*faxd*) is restarted.**

The default is *./work* (Unix) or *.\work* (NT).

---

**Important:** Unlike most other variables, a change to the WORK directory does not take effect until the fax server is restarted.

## Host for License Server

The *license\_server* variable identifies the host computer on which the license server resides. No value means the local host computer.

The default is no value.

## Miscellaneous Server Configuration

This section describes miscellaneous dynamic variables for the fax server.

### Failed Call Retries

The *retries* variable determines how many times a failed call is retried. Note that this is the number of *re*-tries and does not include the initial attempt. Thus the total number of tries is one greater than the value of this variable.

---

The default is 5.

### Failed Call Retry Interval

The *retry\_interval* variable determines the time, in minutes, between an unsuccessful attempt to send a fax and subsequent retries.

The default is 5.

### How to Reschedule Non-Fax Calls

The *retry\_nonfax\_calls* variable determines how many times (and when) the fax server retries a call after NO CARRIER failures and time-outs. A NO CARRIER failure or time-out usually indicates a condition that is not likely to be corrected, such as dialing a telephone answered by a person.

The *retry\_nonfax\_calls* variable has three possible values:

Value	Description
<i>always</i>	As given in the <i>retries</i> variable.
<i>never</i>	Don't reschedule at all.
<i>once_in_30_minutes</i>	Reschedule one more time in thirty minutes.

The default is *always*.

### Lifespan of Exhausted Faxes on Server

Successfully sent faxes are deleted immediately. The *delete\_after* variable determines how long to wait, in hours, before automatically deleting a fax that has exhausted its retry count. The minimum is 1 hour; 0 means don't delete at all.

The default is 48.

---

## Naming Incoming Faxes Automatically

The *auto\_naming* variable determines how names for incoming faxes are constructed. The following table describes each option:

Option	Description
<i>NO</i>	Use date and time.
<i>YES</i>	Use the sender's caller ID (CSI). If the sender's ID doesn't exist, use date and time. This feature can be further refined. ). For more information, see "Naming of Incoming Faxes" in Chapter 9, <i>IsoFax Administration</i> .
<i>DOS</i>	Use date and time, but create PC DOS-compatible file names in the 8.3 format. This setting, which provides 17,576 unique file names per day, may be necessary for successful inter-networking between the UNIX fax server and PCs.

---

The default is *YES* (renaming is enabled).

## When to Ignore Status Requests

The *fax\_queue\_mute\_threshold* variable gives the number of faxes in the queue that causes the server to return *Queue Busy* to client requests for fax queue information.

This variable lets you control the point at which the fax server uses maximum computing power on transmitting faxes in the queue and none on queue reporting.

Set this variable to zero (0) to disable this feature.

The default is *200*.

---

## Spooling Faxes on Remote Servers

Faxes can be forwarded to other fax servers by editing the *REMOTE\_SERVERS* file. Spooling faxes on remote servers may not succeed if the network connection is slow, prone to time-outs, or otherwise unreliable.

The *remote\_server\_retry* variable determines whether to retry when an attempt to spool on a remote server fails.

The default value is *YES*.

The *remote\_server\_timeout* variable sets the maximum number of seconds that the local fax server should spend spooling a fax on a remote server.

The default value is *300*, representing five minutes.

## Custom Succeed/Fail Script

The *success\_fail\_script* dynamic configuration variable lets developers customize the succeed/fail notification that occurs after sending or receiving a fax.

If the variable is not empty, IsoFax attempts to execute its contents. The executed program is expected to take its input from standard input. The arguments and other details passed to the script are given as commentary to a sample *perl* script named *success\_fail.pl.proto* in the distribution.

If the variable has no value, email is used as the means of notification. IsoFax creates the content and subject of the mail internally.

The default value for the variable is no value.

---

## System Print Commands

This section describes the variable that specifies the printer commands used by IsoFax.

### Name of System Print Command (Unix only)

The *printer\_command* variable specifies the printer command to use to print faxes on your system.

The default for SunOS is *lpr -P*.

The default for all other systems is *lp -c -d*.

When *faxd* prints, the *-P* or *-d* is combined with the name of the printer specified in one of the printers named below (for example, *iprinter*) to produce a complete printer command.

## Print Options for Incoming Faxes

This section describes variables that govern printing of incoming faxes. For help in selecting a printer for incoming faxes, see “Variables You’re Most Likely to Change First,” on page 3-4.

### Printing Incoming Faxes Longer Than 11 Inches

If auto printing is enabled (that is, one of the three auto printing variables is defined), setting the *printer\_crop* variable to *YES* suppresses printing of second and subsequent sheets when incoming pages exceed 11 inches. Otherwise, the portion that does not fit is printed on a second page.

The default is *NO*.

---

**Note:** For PostScript printers only, on an experimental and unsupported basis, the values *SHRINK\_TO\_FIT* and *SHRINK\_TO\_FIT\_A4* attempt to scale each fax page to fit on a single printer page. However, it may produce odd results if the fax page is quite long.

---

## Custom Printing of Incoming Faxes

The *iprinter\_script* variable overrides all other *iprinter* values. To use this variable, set it to the full path of your auto printing script. You can find a self-documenting sample script in the file *samples/iprinter\_script*.

The default is no value.

## Printer Name for Outgoing Faxes (NT)

The *oprinter* variable determines whether outgoing faxes are automatically printed. The possible settings for this variable are:

<i>none</i>	Don't print outgoing faxes
<i>use_default_printer</i>	Use the printer currently selected in Print Manager.
<i>&lt;printer name&gt;</i>	Any <i>&lt;printer name&gt;</i> installed in Print manager.

The default is *use\_default\_printer*.

## Print Options for Outgoing Faxes (Unix)

This section describes variables that govern auto printing of outgoing fax confirmation pages, and/or the outgoing faxes themselves.

---

**Note:** You can only configure one of the outgoing printer variables (*oprinter*, *oprinter\_rl*, or *oprinter\_hp*). If none is configured, then outgoing faxes or confirmation pages are not printed.

## Printer Name for Outgoing Faxes

The *oprinter* variable specifies the printer name for outgoing faxes, non-compressed. Use this variable if you have a slow PostScript printer or a high speed channel between print server and printer.

The default is no value.

---

### Compressed Printer Name for Outgoing Faxes

The *oprinter\_rl* variable specifies the printer name for outgoing faxes using run-length compression. Use compression only if you have a *fast* PostScript printer.

The default is no value.

### Printing Outgoing Faxes on HP LaserJet Faxes

The *oprinter\_hp* variable specifies the printer name for outgoing faxes to be printed on an HP LaserJet II or compatible printer.

The default is no value.

### Printing Outgoing Faxes Longer than 11 Inches

The *oprinter\_crop* variable determines how the fax server auto prints outgoing faxes that are longer than 11 inches. If auto printing of outgoing faxes is enabled (that is, one of the *oprinter* variables is configured), set this variable to *YES* to suppress printing of subsequent sheets when outgoing pages exceed 11 inches. Otherwise, the portion that does not fit is printed on a second page.

The default is no value.

### Print Confirmation/Faxes

The *oconf\_or\_fax* variable determines whether a confirmation page, the outgoing fax, or both are auto printed. The following table describes each option available for this variable:

Option	Description
<i>C</i>	Print only the confirmation pages (not the outgoing faxes)
<i>F</i>	Print only the outgoing faxes
<i>B</i>	Print both outgoing faxes and confirmation pages
<i>N</i>	Print neither faxes nor confirmation pages

The default is *N*.

---

## DID Configuration Variables

This section describes the variables that govern the behavior of the DID (Direct Inward Dialing, available with some modems) option. For more information about DID, refer to the file *README/README.did*.

### Timing of the DID Currency Test

The *did\_report\_currency\_test* variable specifies how much time, in seconds, may elapse between the parsed DID call report and time of fax receipt.

The default is *30*.

### DID Call Report Position

The *post\_call\_DID\_report* variable determines whether timing of the DID Currency Test is based on the beginning (default) or termination time of the incoming call. Different DID hardware may identify the call at the beginning or at the end.

If set to *YES*, each *fax\_deliver* process waits for up to (*did\_report\_currency\_test*/2) seconds after receiving a call for a call report before abandoning attempts to auto-route.

The default is *NO*.

---

**Note:** Since this variable causes a delay in the receipt of incoming faxes, do not set this variable to *YES* unless you have DID installed.

---

## Security Control (Unix only)

This section describes the dynamic variables used to control permissions for the fax server by setting the permissions of files and directories created by the fax server.

---

**Important:** These variables should be used only by experienced UNIX systems administrators.

### Directory Creation

The *work\_dir\_perms* and *archive\_dir\_perms* variables define the permissions of the work and fax archive directories. Permissions are defined as octal strings following the standard UNIX convention. See the *chimed(1)* *man* page for more information.

The default is *0777*.

### Fax Server File Creation Mask

The *umask* variable defines the UNIX file creation mask used by the fax server and its associated processes. The file creation mask is used for everything except the directory permissions which are defined individually. See the *umask(1)* *man* page for more information.

The default is *0*.

### Fax Server Administrative Account and Group

The *admin\_user* and *admin\_group* variables define the IsoFax Administrative account and group. You must restart the fax server for changes to these variables to take effect.

When an administrative account is defined, the fax server and its associated processes will only run if the effective id of the fax server is either the administrative account or root.

If the effective id of the fax server is root, it calls *setuid(2)* to set the real and effective id of the process to the administrative account.

---

When an administrative group is defined, the fax server and its associated processes will only run if the effective id of the fax server is the administrative group, or the effective id of the fax server is root. If the effective id of the fax server is root, it calls *setgid(2)* to set the real and effective id of the process to the administrative group.

The default for both variables is no value.

## Called Number Database Management

This section describes the dynamic variables used to manage the called number.

Not all fax devices are capable of receiving high-compression (i.e., two-dimensionally encoded) faxes. Whenever a fax machine is called for the first time, the fax server stores that machine's capabilities (referred to as its *DIS*) in a database. The next time the number is called, the fax server uses the stored DIS to determine the maximum compression acceptable to the remote fax.

### Database On/Off

The *use\_dis\_database* variable enables and disables the use of the DIS database. It has two possible values:

Value	Description
YES	Always use the database
NO	Never use the database

The default is *YES*.

### Database Update Interval

The *dis\_update\_interval* variable specifies the time in *minutes* between database updates. If the *use\_dis\_database* variable is set to *NO*, the database is not updated.

The default is *60* (one hour).

---

## Database Purging

The *dis\_purge\_after* variable specifies the number of *hours* that a record remains in the database. Records older than the hours you define in *dis\_purge\_after* are purged from the database. If *dis\_purge\_after* is set to 0, or the *use\_dis\_database* variable is set to *NO*, the database is not purged.

The default is *720* (30 days).

## Fax Inbox Daemon

The *faxinboxd* daemon must be running in order to use either the Designated Forwarder feature or to auto-deliver faxes from the inbox directory on the server to the inbox directory on the client.

*use\_fax\_inboxd* determines whether to start the FaxInbox daemon when the fax server starts. It has two possible values:

Value	Description
YES	At fax server startup, the fax server automatically starts <i>faxinboxd</i> and restarts it if it stops running. If the fax server is already running when you change this variable, you must kill and then restart the fax server.
NO	<i>faxinboxd</i> is not started. Changing the value from <i>YES</i> to <i>NO</i> does not kill a <i>faxinboxd</i> that is already running.

The default is *YES*.

## Fax Server Configuration Files

This section describes how to create and use a fax server configuration file.

The dynamic variables described in the preceding sections *automatically* assume the default values given. In most cases the default values described in the preceding sections are sufficient for the fax server to send and receive faxes. However, to use other values, you must use a fax server configuration file. The configuration file lets you customize the operation of the fax server by defining your own values for the dynamic variables.

---

## Creating a Configuration File

A configuration file is an ASCII file containing one or more dynamic variable definitions. For your convenience, a sample configuration file, named *conf.info*, is shipped with IsoFax. This file contains all the dynamic variables with explanatory text. You can use this file as a point of departure for your own configuration file. (A read-only version of the original file can be found as *conf.info.proto* in the `$ISOFAHOME` directory).

---

**Important:** Edit the ASCII configuration file only with Bristol Web Admin tools or a text editor; **do not use a word processor**, as this might add superfluous characters which could affect the parsing of the file.

As you edit the configuration file, follow these rules:

- A configuration file can have any name, but the Web admin tools look for *conf.info*.
- The dynamic variable value includes everything to the right of the equals sign except leading and trailing white space. Newlines are supported.
- *YES/NO* values should be uppercase letters.
- Lines beginning with # are ignored.

# 4

## ISO FAX SERVERS

---

This chapter describes the two primary IsoFax software servers: the license and the fax server, including their activities, files, and troubleshooting.

The Bristol license server, *blserver*, grants licenses to all IsoFax client and toolkit programs.

The IsoFax fax server daemon, *faxd*, is responsible for scheduling outgoing faxes and for detecting incoming calls. It also interacts with a number of other programs and utilities. A license is required for each *faxd* running on your network.

We recommend that you start *faxd* and *blserver* from a shell window until your installation has stabilized and you are familiar with the operation of the servers. You may then elect to start both *blserver* and *faxd* automatically at boot time. See “Starting the Servers at Boot Time” in Chapter 9, *IsoFax Administration*, for suggested procedures.

---

## The License Server, *blserver*

Each IsoFax client requires a license every time it is run. The types and number of licenses available reside in the file *bristol\_licenses*, which you create during installation by running the *license\_tool* program. This file contains a special validation code unique to your combination of licenses.

The *bristol\_licenses* file in turn is read by the IsoFax license server, which administers the various types of licenses and keeps track of how many of each type are in use at any given time.

The license server performs the following functions:

- Validate the contents of the *bristol\_licenses* file.
- Extract licensing information from the *bristol\_licenses* file.
- Check out licenses as clients request them (up to the limit available).
- Accept license check-ins from client programs when a checked-out license is no longer needed.
- Revoke the license of any client that doesn't periodically renew its license. This prevents non-working clients from retaining control of a license.
- Generate the server log file, *blserver\_log* (detailed in Chapter 9, *IsoFax Administration*).
- Generate various messages about passwords.

### License Types

A client checks out a license when it runs or wants to run a licensed process. Most IsoFax programs, including those in the Fax Toolkit and the graphical interface programs such as IsoFax/MX, require a simple *faxclient* license.

---

Note: In the absence of a license, some programs run in Demo mode with limited capabilities.

---

For example, the graphical program IsoFax/MX requires a *faxclient* license, but it may also require a PostScript license for imaging a PostScript file. In this case, IsoFax/MX first checks out a *faxclient* license. When it is time to process the PostScript file, IsoFax/MX checks out a *postscript* license. After processing, it checks in the *postscript* license. After executing the complete fax process, it checks in the *faxclient* license.

Graphical interface programs, such as IsoFax/MX and the IsoFax WinClient, check in their *faxclient* licenses when they are displayed as icons (that is, minimized on the desktop).

Some programs or options such as the daemon *faxd* and the PC clients IsoFax require special licenses.

## License File

The default file name for the license file is *bristol\_licenses*. This section describes how *blserver* works with the license file.

The command line syntax for *blserver* is as follows:

```
% blserver [-l logfile][license_file_directory]
```

where *license\_file\_directory* is the full path for the directory where the *bristol\_licenses* file resides and *logfile* specifies where *blserver* will write its log file.

### **Example**

```
% blserver -l /var/adm/brlog /var/passwords
```

causes the server to look at */var/passwords/bristol\_licenses* for the IsoFax license file before the other default locations, and to write its log file in */var/adm/brlog*.

If you do not enter a directory name on the command line, *blserver* searches the following directories in this order:

*\$BLSERVERHOME*

*\$ISOFAXHOME*

*The current directory*

The two environment variables *BLSERVERHOME* and *ISOFAXHOME* let you place the license file in a directory other than *ISOFAXHOME*.

---

## Support for PowerBase (Unix only)

PowerBase is The Bristol Group's contact database, which doubles as a shared network phone directory for IsoFax running on the SunOS platform. When run as a standalone product (without IsoFax), PowerBase requires its own separate license server and license file, *power\_base\_license*.

The *blserver* program searches directories for the PowerBase licenses in the following order:

*\$BLSERVERHOME*  
*\$PBHOME*  
*The current directory*

By putting the IsoFax and PowerBase license files in the same directory and setting the environment variable *BLSERVERHOME* to point to that directory, you can start *blserver* from any location and have it find the license files for either IsoFax or PowerBase.

If you specify a directory as an argument to *blserver*, the program searches that directory first for both the *bristol\_licenses* and *power\_base\_license* files.

### **Example**

```
% blserver /var/passwords
```

searches */var/passwords/bristol\_licenses* for the IsoFax license file and */var/passwords/power\_base\_license* for the PowerBase license file.

## Troubleshooting the License File

If the license server cannot read the license file, it issues a message naming the missing file. Problems with particular licenses within the file are printed to the window in which *blserver* is running.

Any error in the license files causes *blserver* to exit. To solve such a problem, first make sure you entered the information correctly with *license\_tool* (see Chapter 2, *Installation*) and that the file contains no superfluous information that the server could mistake for license errors.

---

For example, if your license has an expiration date and someone sets back the system date, *stderr* will display an *Inconsistent System Date* error message. Remove the problem license file from the search path.

For additional troubleshooting information about licensing, please refer to the troubleshooting appendix.

## License Server Activity, *license\_info*

The program *license\_info* gathers information from the license server while *blserver* is running. This section covers some useful examples of obtaining statistics with *license\_info*. The full syntax is available from the command line (type *license\_info -help*).

### *Examples (Unix)*

- Using *license\_info* without arguments,

```
% license_info
```

looks for the license server on the current host and outputs general statistics, as well as license information.

- Adding the *-s* (for server) and *-l* (for licenses) switches with appropriate arguments,

```
% license_info -s host -l faxclient
```

returns the number of *faxclient* licenses currently available (not in use) from the license server on *host*.

- Adding the *-total* switch,

```
% license_info -s host -l faxclient -total
```

returns the total number of *faxclient* licenses (whether in use or not) on the license server on *host*.

## The Fax Server, *faxd*

The name of the IsoFax fax server daemon is *faxd*. Its job is to manage various IsoFax services and utilities. These functions are controlled by a variety of fax server dynamic configuration variables, which are discussed in detail in Chapter 3, *IsoFax Configuration*.

The command line syntax for *faxd* is as follows:

---

```
% faxd [-switches] [config_file_name]
```

The switches are as follows:

<code>[-h]</code>	Display this message and exit
<code>[-r]</code>	Display revision and exit
<code>[-q queue_number]</code>	Queue number for this server
<code>[-M modems_path]</code>	Full path to the <i>MODEMS.info</i> file
<code>[-U users_path]</code>	Full path to the <i>USER_LIST.info</i> file

The *conf\_file\_name* command argument specifies the name of an *optional* IsoFax configuration file, from which you can custom-configure the dynamic fax server variables.

In many IsoFax installations, *faxd* starts automatically at boot time.

---

**Note:** For an explanation of the *TRACES* file, fax queues, and for suggestions on implementing automatic startup, see Chapter 9, *IsoFax Administration*.

---

## Fax Server Functions

The fax daemon has two basic functions:

- When *faxd* finds a fax to be sent in the queue, it launches a *fax\_deliver* process to send the fax. When that process terminates, *faxd* updates the appropriate logs.
- When *faxd* detects an incoming fax (the modem sends a RING message), it launches a *fax\_deliver* process to receive the fax. When that process terminates, *faxd* updates the appropriate logs.

At startup, *faxd*:

- Reads the configuration file if one exists.
- Checks out a license.
- Reads the *MODEMS.info* file.
- Locates and fully configures all compatible modems.
- Starts the *faxit* process.
- Starts the *faxinfod* process.
- Optionally starts the *faxinboxd* process.

Once *faxd* has completed the startup process, it enters an eternal loop in which it:

- Creates a status report.
- Renews its license.
- Checks for completed *fax\_deliver* (send/receive) processes.
- Checks the outgoing queue for faxes ready to send; if one exists, it launches a *fax\_deliver* process to send it.
- For approximately 45 seconds, listens for a RING message from any modem; if one is heard, it launches a *fax\_deliver* process to receive the fax.
- Checks for a changed configuration file.
- Rechecks the modems and their configuration.

---

## Auxiliary Fax Server Processes

The following operations, which are all started by *faxd*, are not described in detail since they are considered internal specifications. We mention them only to help you interpret what you see when you list active processes using the *ps* command.

Operation	Description
<i>faxit</i>	This helper process runs parallel to and is started by <i>faxd</i> . Using RPC (Remote Procedure Calls) <i>faxit</i> accepts faxes from network clients and spools them in the <i>work</i> directory. If <i>faxit</i> dies, <i>faxd</i> restarts it.
<i>fax_deliver</i>	When <i>faxd</i> detects a fax to send or an incoming call, it launches a <i>fax_deliver</i> process to drive the fax modem. Thus, <i>fax_deliver</i> is present only when a modem is active (sending or receiving a fax); however, it is not unusual to see <i>fax_deliver</i> in the process table. If your installation includes multiple modems, you may see multiple <i>fax_deliver</i> processes.
<i>faxinfod</i>	This server process, which is started automatically by <i>faxd</i> , provides information to other components of the system. For example, it provides information to <i>fax_deliver</i> about user preferences in the <i>USER_LIST.info</i> file. It is also responsible for providing outgoing queue status information to every client.
<i>faxinboxd</i>	This fax server process, which can be enabled or disabled via the <i>USE_FAXINBOX</i> variable, provides both fax-forwarding and inbox services. Note that the server variable is not dynamic; that is, <i>faxd</i> must be stopped and restarted after changing its value.

---

**Note:** The *faxd*, *faxit*, and *faxinfod* processes must be running at all times.

---

## Monitoring the Fax Queue (Unix only)

Sophisticated monitoring of outgoing queues is part of GUI client software such as IsoFax/MX and IsoFax WinClient. In addition, similar information is displayed by the character-based utility *faxqterm*, which is described in Chapter 9, *IsoFax Administration*.



# 5

## MODEM CONFIGURATION

---

In the installation chapter, you created a single modem declaration in the *MODEMS.info* file for the purpose of sending a single test fax. You may need additional modems to handle the fax traffic at your site. This chapter explains how to:

- Declare additional modems, up to a total of 96.
- Change modem behavior by adding *attributes* to the declaration.
- Use unsupported modems with IsoFax.
- Declare a *[default]* modem whose attributes are automatically inherited by all modems.
- Create a custom configuration for *each* modem.

You also find:

- Examples of custom modem configurations.
- A complete list of all the possible modem attributes and their values.
- An explanation of how modems are managed by the fax server.

---

## Modem Declarations and Records

The *MODEMS.info* file contains device records describing modems. You can edit this file directly with a text editor, or by means of an HTML browser directed to the IsoFax server administration site.

Each record in this file consists of a device declaration (the record “key”) optionally followed by one or more attributes or attribute-value pairs describing that modem.

Each device declaration begins with the device name in square brackets on a line by itself; for example:

```
[ttya]
```

For non-RS232, bus-attached modems, each channel (or phone line or T1 time-slot) is considered as a unique device, for example:

```
[brooktrout0]
```

Please note that each of these examples illustrates a functionally complete modem declaration. Unless you wish to custom-configure a modem, you need go no further.

### Attributes and Values

The modem record *optionally* contains one or more *attributes* or *attribute-value pairs*. A complete list of attributes and their supported values are given at the end of this chapter. The following examples of attribute value pairs illustrate the various types of attributes.

```
speaker_on      = always  
out_queue_num   = 2
```

---

The following list describes attribute types and syntax:

Attribute Type	Description
<i>Text</i>	Consists of one or more words. For clarity in formatting, leading and trailing white space may surround the value, but is removed during parsing. White space <i>between</i> words is retained.
<i>Numeric</i>	Ordinary numerals.
<i>Lists</i>	In contexts where multiple values are appropriate, they can be concatenated to form a list, with each value separated by a comma.

---

**Note:** Values are case-sensitive, limited to 1000 characters, and must be constructed on a single physical line (no imbedded newlines). For a complete description of the lexical rules and syntax associated with attribute-value pairs, refer to the file *READMES/README.avlex* in your distribution.

---

## Value Assignment

Attributes are assigned one of the following values:

- An *initial* value.  
If you do nothing, all attributes automatically receive the initial values described in “Attribute Definitions” on page 5-8.
- The *default* value given in the *[default]* device record.  
This lets you override the initial value and set a default profile for every modem. See “The *[default]* Device” below for details.
- An *explicitly assigned* value in a *[device]* record.  
This overrides both the initial and the default values, so you can customize the configuration for each modem.

Attributes explicitly assigned in the *[device]* record override the values given by the *[default]* record, which in turn override initial values.

## The *[default]* Device

The *[default]* device supplies default attributes that apply to all devices declared in the file. This simplifies the effort required to add a new device, since each new device automatically inherits the default values. The following is a sample *[default]* device where the initial value for the *incoming\_gui* attribute is changed from its initial value to “Sales Incoming Directory.”

```
[default]
  incoming_gui = "Sales Incoming Directory"
  dev_root     = /dev/isofax
```

---

**Note:** If all your device drivers reside in the same subdirectory, you can specify the directory in the *dev\_root* attribute. Thereafter you only need the device name in the *[device]* key.

---

## Declaring How Modems Are Used

The *usage* attribute determines how each modem is used. The initial value for this attribute is *isofax*, which means the modem can send and receive faxes. If this is how you wish to use all your modems, it is not necessary to modify any modem entry.

To reserve a modem for incoming calls only, add the following line to the modem record:

```
usage = isofax_i
```

To reserve a modem for outgoing calls only, add the following line to the modem record:

```
usage = isofax_o
```

See “Attribute Definitions” on page 5-8 for a list of possible *usage* values.

## Using Unsupported Modems

An unsupported modem may work with IsoFax if the fax server is forced to treat it as if it were a supported modem. However, before attempting to alias a modem, you should know that the chance of success is slight because of subtle differences among modems. Consult the file *README.modems* for an explanation of our distinction between supported versus recommended modems. The file also contains information about specific modems that have been successfully installed with IsoFax.

---

**Important:** Any modem you choose to use with IsoFax must be compatible with the EIA 592 standard, commonly referred to as Class-2 modems. Modems that claim to be Class-2 modems are supported, but Class-1 and Class 2.0 modems are not.

---

To force IsoFax to accept an unsupported modem locate its declaration in the *MODEMS.info* file and enter the following attribute:

manufacturer = *modem\_type*

Where *modem\_type* is one of the following:

```
rockwell
multitech
everex
```

---

Note: Many popular brands of Class-2 fax modems contain fax modem chips manufactured by Rockwell International.

## Examples of MODEMS.info Records

This section contains examples illustrating entries in the *MODEM.info* file.

### Example 1

It is a good idea to begin the *MODEMS.info* with a *[default]* record as shown in this example. This way, it is very clear exactly what profile every modem in the file inherits.

The *dev\_root* attribute in the *[default]* record specifies the root path to the device drivers. This enables subsequent device declarations to contain only device names. Various communications speeds are specified and the default usage of *isofax\_o* dedicates modems for outgoing use only.

```
[default]
dev_root           = /dev
usage              = isofax_o
min_send_fax_rate = 4800
max_receive_fax_rate = 14400
min_send_fax_rate = 7200
```

---

## Example 2

In this example, since the default *dev\_root* attribute contains the path to all device drivers, this is simply declared as *ttya*. Notice that a GUI description is given for this outgoing queue. Strictly speaking, the queue number is unnecessary because it reiterates the initial value; it is stated anyway here for clarity. For more information about multiple outgoing queues, see “Managing Multiple Queues” in Chapter 9, *IsoFax Administration*.

```
[ttya]
  speaker_volume      = medium
  out_queue_num      = 1
```

## Example 3

In this example, *ttyb* is assigned to queue number two and is given an appropriate GUI description. This particular modem is not a supported type, but the *modem\_type* attribute forces the server to accept it as an accepted type, in this case, *rockwell*.

```
[ttyb]
  out_queue_num      = 2
  modem_type         = rockwell
```

## Example 4

In this example, the device is not located in the *dev\_root* directory given in the *[default]* record, so its full path is given here. Unlike the other modems, which inherit an outgoing *usage* attribute from the *[default]* record, this modem is declared incoming-only. An incoming directory named *incoming2* is given a GUI description of *Sales*.

```
[/dev/cdata/cua00]
  usage              = isofax_i
  incoming_dir       = incoming2
  incoming_gui       = Sales
```

---

## Attribute Definitions

This section provides the definitions for attributes with their initial and valid values.

Keep in mind that all attributes have sensible initial values for ordinary use. This means that unless you wish for a device to have extraordinary capabilities, no additional information must be entered.

Attributes with an asterisk (\*) are not applicable to board type modems such as Brooktrout.

Attribute	Definition and Values
<i>incoming_dir</i>	The incoming directory associated with this modem. This is how multiple incoming queues are implemented. <b>Initial value:</b> <i>./incoming</i>
<i>incoming_gui</i>	The string naming the incoming directory. It is important to keep these strings brief but descriptive. <b>Initial value:</b> <i>General Incoming</i>
<i>incoming_perms</i>	Permissions are defined as octal strings following the standard UNIX convention. <b>Initial value:</b> <i>0777</i>
<i>dev_root*</i>	If <i>[device]</i> contains only the device name, the path to the device is given here. <b>Initial value:</b> <i>/dev</i> (for UNIX)
<i>usage</i>	Defines how the modem is used. <b>Initial value:</b> <i>isofax</i> (send and receive) <b>Other values:</b> <i>isofax_o</i> Send only <i>isofax_i</i> Receive only <i>isofax_v</i> Voice only <i>isofax_vo</i> Voice, fax send <i>isofax_did_info</i> DID control channel

---

Attribute	Definition and Values
<i>out_queue_num</i>	The outgoing queue number for this modem. <b>Initial value:</b> <i>1</i>
<i>modem_type*</i>	Ignores the modem's response to the manufacturer identification command and treats the modem as if it were one of the following known types of modems: <i>rockwell</i> <i>usrobotics</i> <i>everex</i>
<i>speaker_on*</i>	Defines when the modem speaker is on. <b>Initial value:</b> <i>until_connect</i> <b>Other values:</b> <i>always</i> and <i>never</i>
<i>speaker_volume*</i>	Defines the modem's speaker volume. <b>Initial value:</b> <i>low</i> <b>Other values:</b> <i>high</i> and <i>medium</i>
<i>user_modem_config*</i>	The last command sent to modem during configuration. <b>Initial value:</b> <i>none</i>
<i>tty_baud_rate*</i>	The serial port baud rate. You should verify validity of any other rate for your computer experimentally (by sending a fax), but in any case must be at least 20% greater than the bit rate of the fastest modem. <b>Initial value:</b> <i>19200</i>
<i>max_send_fax_rate*</i>	Limits the maximum negotiated fax speed for outgoing faxes. <b>Initial value:</b> <i>14400</i> <b>Other values:</b> <i>4800</i> , <i>7200</i> , and <i>9600</i>

---

Attribute	Definition and Values
<i>min_send_fax_rate*</i>	Limits the minimum negotiated fax speed for outgoing faxes. <b>Initial value:</b> 4800 <b>Other values:</b> 2400, 7200, 9600, and 14400
<i>max_receive_fax_rate*</i>	Limits the maximum negotiated fax speed for incoming faxes. <b>Initial value:</b> 9600 <b>Other values:</b> 4800 and 14400
<i>send_compression*</i>	Limits the negotiated data compression format for outgoing faxes. <b>Initial value:</b> MR for high resolution <b>Other value:</b> MH for low resolution
<i>receive_quality_checking*</i>	During reception, some modems (for example, Multitech) check the quality of the incoming image and request retransmission if an arbitrary number of errors are present. Some fax machines hang up when they receive this request. <b>Initial value:</b> false <b>Other value:</b> true, to enable receive quality checking
<i>unsupervised_dialing*</i>	Defeats the Black-listing modem “feature” in modems in certain foreign countries. This command is not known for all modems. <b>Initial value:</b> true
<i>voice_script*</i>	With the Fax On Demand option, provides the full path to the startup script containing the initial announcement.  <b>Initial value:</b> ./fodo.script

---

---

## Modem Management (RS232 modems only)

---

**Note:** The balance of this chapter pertains to Class 2, RS-232 attached modems only. If you have Brooktrout or other bus-attached modems, none of the following applies.

Fax modems are at the heart of the fax server, so you should know how they are managed. The management goals center on the following areas:

- Initial configuration
- Periodic modem retesting
- Minimizing modem reconfiguration
- Reviving a moribund modem
- Prompt answering of incoming calls
- Two-dimensional compression

### Initial Configuration

When *faxd* starts, it checks each modem declared in the *MODEM.info* file to ascertain that one modem qualifies as a EIA Class-2 fax modem. Next, *faxd* fully configures the modem(s) for standard fax modem operation, and then custom-configures it according to the attributes given in the *MODEMS.info*. These attributes are described in detail earlier in this chapter.

If configured successfully, the modem is placed into a pool of available modems that are capable of sending and receiving faxes. Otherwise, the modem is declared inoperative and *faxd* periodically rechecks and attempts to revive it.

### Periodic Modem Retesting

After the initial configuration during startup, *faxd* rechecks one or more modems each time around its main loop; that is, approximately every 45 seconds. Because many modems insert an inter-character delay between transmitted characters while in idle state, three or more seconds may be required to fully configure a modem.

---

## Minimizing Modem Reconfiguration (RS232 modems only)

Since IsoFax supports as many as 96 modems per queue, more than two minutes would be consumed if each modem were to undergo a full configuration each time around the loop. During this period, incoming calls would certainly be missed and scheduled outgoing faxes would be delayed.

### The Tattletale Value

To avoid the time-consuming process of needlessly reconfiguring modems, *faxd*'s full configuration procedure sets an obscure modem register to a nonstandard value. This value, referred to as the "tattletale," is automatically set to a standard value by modem hardware and software resets. The presence of a nonstandard value in this register, therefore, constitutes proof that the modem has not been reconfigured by another process, replaced by an unconfigured modem, disconnected, or simply power-cycled. In other words, the tattletale proves that the modem is still fully configured.

Once a modem is configured, *faxd* only needs to issue a single command to query the modem for the contents of its register. This is referred to as "pinging" the modem. If the modem's response matches the tattletale value set by *faxd*, the modem is declared ready to go. Depending upon the brand of modem, the tattletale test consumes a few tenths of a second per modem.

If the modem's response does not match the tattletale value, *faxd* automatically configures the modem fully as at startup. If the modem fails to respond to the ping or to the subsequent full configuration, *faxd* removes it from the pool of available modems. However, pinging continues and, if the modem revives, it is once again placed in the pool of available modems. See "Reviving a Moribund Modem," on page 5-13 for more information.

Immediately prior to sending or receiving, *fax\_deliver* issues commands specific to its purpose. It also intentionally sets the tattletale register to a second nonstandard value. During pinging, *faxd* recognizes this value and "freshens" the modem, undoing effects of the commands required to send or receive faxes.

If started with a configuration file, *faxd* detects when the file has been edited and automatically re-reads the dynamic variables. During pinging, *faxd* reconfigures the modem to reflect any changes in dynamic variables that affect the modem.

---

## Limiting Pinging

Despite the efficiency of the tattletale method in sensing when a modem needs to be reconfigured, you may wish to reduce the amount of time spent pinging modems. The total amount of time in seconds to spend pinging modems is determined by the setting of the *max\_secs\_to\_spend\_pinging* dynamic variable.

Modems are pinged in round-robin fashion, so all modems are eventually tested. It is not possible to turn off pinging entirely; if the *max\_secs\_to\_spend\_pinging* variable is set to zero, one modem is always checked during each pinging session.

## Reviving a Moribund Modem

If a modem fails to respond to a ping or subsequent reconfiguration, *faxd* tries a series of measures, referred to as heroics, to revive it. These heroics are quite time-consuming, requiring as much as 12 seconds. Recognizing that a modem unresponsive to heroics now, is unlikely to respond 45 seconds later, *faxd* limits the frequency of heroics. The *minutes\_between\_heroics* dynamic variable determines how often, in minutes, *faxd* heroically attempts to revive an unresponsive modem. The default value is 60 minutes.

Note that *faxd* continues to ping an unresponsive modem on schedule. If the modem revives, it will respond normally to the ping and immediately receive a full configuration.

## Prompt Answering of Incoming Calls

When *faxd* detects a ring signal from a modem, it immediately launches a *fax\_deliver* process to answer the phone and receive the fax. To avoid issuing answer commands that might collide with subsequent ring signals from the modem, *fax\_deliver* answers the phone immediately after the second ring. Note that during periods of extreme fax server activity, the answer may occur on the third or, rarely, the fourth ring. To assure second-ring answers, dedicate a fax server queue to inbound faxing.

## Two-Dimensional Compression

Note: Brooktrout modems are capable of converting documents between various compressions on the fly, so few of the following comments apply.

---

Depending upon the nature of the fax, 2-D (two-dimensional) compression can reduce transmission time from 15 to 50 percent. Unfortunately, about 20 percent of fax devices do not support 2-D compression. IsoFax works around this limitation in the way described below.

The problem boils down to knowing the capability of the local fax modem and the remote fax device. The former is of course known, and the latter *may* be found in the server's database of called numbers, which contains the technical capabilities of every fax called.

All clients create 1-D dimensional faxes, which are acceptable to all fax machines. If *either* the fax modem *or* the fax device does not support 2-D compression, the fax file is transmitted in its original 1-D format. However, if both local and remote fax devices support 2-D compression, the fax file is converted to 2-D compression before placing the call.

Phone numbers and fax capabilities are placed in the dialed number database when a fax machine is called for the first time. This means that on the initial call, the fax server does not know the remote modem's capabilities. In this case, provided the local modem supports 2-D compression, the fax server uses 80/20 odds and up-converts the file to 2-D, retaining a copy of the original 1-D file. If, after placing the call, the server discovers that the remote fax device does not support 2-D compression, it transmits the original 1-D file.

# 6

## USER CONFIGURATION

---

In a network comprising a variety of clients, it is necessary to customize the server's behavior for each user. For example, some clients may wish to receive their faxes as email, while others may want to receive their faxes using the IsoFax FaxInbox mechanism. Similarly, filename formats differ among platforms.

This chapter explains how to customize IsoFax for particular users by creating entries in the *USER\_LIST.info* file. Normally this administration is done using the IsoFax WebAdmin tools from a web browser. The following topics are covered:

- User declarations and records
- Value assignment
- Special users (*default* and *admin*)
- Attributes for each type of client and user
- Attributes that override client preferences
- Attributes for fax forwarding, fax routing, and fax delivery

---

## User Declarations and Records

The *USER\_LIST.info* file contains records describing users. It can be edited with a text editor or from an HTML browser directed to the IsoFax sever administration site.

Each record in this file consists of a user keyword optionally followed by one or more attributes or attribute-value pairs describing that user. The user declaration begins with the user's name in square brackets on a line by itself; the record ends with the next user name (or the end of the file). For example:

```
[bertha dablues]
```

Please note that this example illustrates a functionally complete user declaration. Unless you wish to custom-configure a user, you need go no further.

The *[user]* keyword consists only of letters, numbers, and the underscore character. The *[user]* keyword is not case-sensitive. You can use white space, punctuation, and capitalization for clarity, but these are removed during parsing.

---

**Important:** For UNIX users, the *[user]* keyword must be the user's login name. For PC users, the *[user]* keyword is the name entered in the "User Name" field in the Settings/Network dialog.

## Attributes and Values

The user record itself *optionally* contains one or more *attribute* or *attribute-value pairs*. A complete list of attribute and supported values are given at the end of this chapter. The following attribute-value pairs illustrate the various types of attributes.

```
human_name           = Dewey Cheetam
userid               = 125
fax_forwarding       = false
```

---

Attribute Type	Description
<i>Text</i>	Consists of one or more words. For clarity in formatting, leading and trailing white space may surround the value, but are removed during parsing. White space between words is retained.
<i>Numeric</i>	Ordinary numbers.
<i>Lists</i>	As shown in the <i>server_cover_list_gui</i> example, any type of value can be combined to form a list, with each value separated by a comma.
<i>Boolean</i>	These have only two possible values: true and false. As illustrated by the <i>winclient</i> attribute, a boolean attribute by itself is considered true.

---

**Note:** Values are case-sensitive, limited to 1000 characters, and must be constructed on a single physical line (no imbedded newlines). For a complete description of the lexical rules and syntax associated with attribute-value pairs, refer to the file *README.avlex* in your distribution.

---

## Value Assignment

Attributes are assigned one of the following values:

- An *initial* value.  
If you do nothing, all attributes automatically receive the initial values given in “Attribute Definitions” starting on page 6-5.
- The *default* value given in the *[default]* user record.  
This lets you override the initial value and set a default profile for every user. (This is explained thoroughly in the next section.)
- An *explicitly assigned* value in a *[user]* record.  
This overrides both the initial and the default values, so that you can customize the configuration for each user.

Attributes explicitly assigned in the *[user]* record override the values given by the *[default]* record, which in turn override initial values.

## The *[default]* User

The *[default]* user supplies default attributes that apply to all users declared in the file. This greatly simplifies the effort required to add a new user, since each new user automatically inherits the default values. The following is a sample of a *[default]* user:

```
[default]
delivery_dir_root      = /var/fax
cover_locus            = server
cover_list             = fancy.ps, reg.ps
cover_list_gui        = Fancy, Regular
highest_priority       = 3
net_poll_interval     = 120
```

---

## Attribute Definitions

This section provides the definitions for attributes with their initial and valid values.

Keep in mind that all attributes have sensible initial values. This means that unless you wish for a user to have extraordinary capabilities, only a small amount of information must be entered for each user.

All attributes are optional.

### The [admin] User Attributes

The purpose of the *[admin]* user is to identify and characterize the IsoFax administrator, the person responsible for monitoring the health and well-being of the fax server. The *[admin]* user is notified (usually by email) whenever a variety of events occurs.

Unlike the *[default]* user, the *[admin]* user is a real person or an administrative account. This means that in addition to the *admin*-only attributes listed below, *[admin]* may have all the attributes of an ordinary user.

The following attributes may be assigned *only* to the *[admin]* user:

Attribute	Definition and Values
<i>admin_notify_level</i>	<p>This attribute limits notification about writes to the <code>exception_log</code> based upon the severity of the error.</p> <p><b>Initial value:</b> <i>none</i></p> <p><b>Other values:</b></p> <p><i>fatal</i></p> <p><i>error</i></p> <p><i>warning</i></p> <p><i>notice</i></p> <p>The list is inclusively hierarchical; for example, a list that consists only of <i>notice</i> also includes <i>warning</i>, <i>error</i>, and <i>fatal</i>.</p>

---

Attribute	Definition and Values
<i>admin_exception_volume</i>	<p>This attribute limits the number of <i>exception_log</i> email messages sent to <i>[admin]</i> within any 24-hour period.</p> <p><b>Initial value:</b> 5</p> <p><b>Other values:</b> 0, to allow unlimited messages</p>
<i>server_mail_from</i>	<p>This string contains the email <i>From</i> field when the server sends notification by email.</p> <p><b>Initial value:</b> <i>IsoFax_server</i></p>
<i>when_to_notify</i>	<p>This attribute is a comma-separated list of conditions on which <i>[admin]</i> receives notification. (The method of the notification is defined by the <i>[admin] how_to_notify</i> attribute).</p> <p><b>Initial value:</b></p> <p><i>never</i> No notification</p> <p><b>Other values:</b></p> <p><i>fax_incoming</i> On every incoming fax that arrives at the server</p> <p><i>fax_outgoing</i> On every outgoing fax on the server</p> <p><i>fax_failures</i> On every fax failure</p> <p><i>fax_exception</i> Notify on every write to the <i>exception_log</i></p> <p><i>incoming_failures_only</i> Like <i>fax_failures</i>, but only notifies on failures of incoming faxes.</p> <p>Note: The initial value for the <i>[admin]</i> user is <i>never</i>, which is an invalid value for ordinary users.</p>
<i>smtp_host (NT only)</i>	<p>Name of SMTP mail server to use for notification messages.</p>

---

<i>pop_host (NT only)</i>	Name of POP3 mail server to use for notifications messages. <b>Note:</b> you must define <i>either</i> an SMTP or POP3 host in order to receive email notifications from an NT IsoFax server.
<i>pop_user (NT only)</i>	Account name to be used when sending notifications from the <i>pop_host</i> .
<i>pop_passwd (NT only)</i>	Account <i>pop</i> password to be used with <i>pop_user</i> (above).
<i>pop_freq (NT only)</i>	(Numeric) How often, in minutes, the fax server attempts to contact the POP3 mail server. Default is 5 minutes.
<hr/>	
<i>mimifax_args (NT only)</i>	This is a list of three arguments to be provided to the <i>mimifax</i> fax gateway. The arguments, in order, are the path to the coversheet template, name of the license server host, and the name of the fax server host; e.g., <i>mimifax_args =</i> <i>c:\IsoFaxServer\COVER_SHEET. PS</i> <i>lhost f host</i> .

---

In addition to these attributes, the *[admin]* user requires an email address, described in the next section.

---

## Attributes Used by Clients of All Types

The following attributes are available to all users, regardless of the client platform.

Attribute	Definition and Values
<i>access_queue</i>	Defines the access permissions this user has on outgoing queues. <b>Initial value:</b> <i>owner</i> Those scheduled by <i>[user]</i> <b>Other values:</b> <i>all</i> All entries <i>none</i> No entries
<i>access_history</i>	Defines the access permissions this user has on history log. <b>Initial value:</b> <i>owner</i> Those scheduled by <i>[user]</i> <b>Other values:</b> <i>all</i> All entries <i>none</i> No entries
<i>client_type</i>	Defines the type of client. This attribute is currently only used for self-documentation. Examples include: <i>win3.11</i> , <i>winnt</i> , <i>mac</i> , and <i>unix-sun</i> . There is no initial value.
<i>email_address</i>	Contains the user's email address. For the <i>[admin]</i> user, this is the email address for receiving notification about significant IsoFax events.
<i>when_to_notify</i>	This attribute is a comma-separated list of conditions on which <i>[user]</i> receives notification. (The method of the notification is defined by the <i>[user]</i> <i>how_to_notify</i> attribute). <b>Initial value:</b> <i>never</i> No notification <b>Other values:</b> <i>fax_incoming</i> On delivery of a fax to <i>[user]</i> <i>fax_outgoing</i> On every outgoing fax sent by the <i>[user]</i> <i>fax_failures</i> On every failed fax sent by <i>[user]</i> <i>incoming_failures_only</i> On every failed incoming fax

---

Attribute	Definition and Values
<i>how_to_notify</i>	<p>Defines how to notify the user of various events (for example, that a fax has arrived).</p> <p><b>Initial value:</b>  <i>email</i> Send email message to the address given in the <i>email_address</i> attribute.</p> <p><b>Other values:</b> none</p>
<i>human_name</i>	<p>The user's name as you wish it to appear in GUIs (for example, the designated forwarder's list) and error messages. If no <i>human_name</i> is given, the clients use the <i>[user]</i> key.</p>

---

### Attributes Used Only by PC Clients

Attribute	Definition and Values
<i>winclient</i>	<p>Boolean attribute that identifies this PC user as a per-seat licensee.</p> <p><b>Initial value:</b> <i>true</i></p>
<i>userid_override</i>	<p>This is a client-server override attribute. This allows the administrator to assign to a PCs a userid that overrides the one derived by the PC. Since the userid is included in every fax queued, this override enables the admin to track the usage of a particular person by a single userid. There is no initial value.</p>
<i>hostname_override</i>	<p>This is a client-server override attribute. This allows the administrator to assign to a PCs a hostname that overrides the one derived by the PC. Since the hostname is included in every fax queued, this override enables the admin to track the usage of a particular person by a single hostname. There is no initial value.</p>

---

---

## Client Preference-Override Attributes

The following attributes override their client-side counterparts. The client queries the fax server at power up to ascertain these attributes.

Attribute	Definition and Values
<i>alternative_faxservers</i>	A comma-separated list of alternative fax servers on which clients can attempt to queue faxes if the primary fax server fails. Each time the client acquires its preferences from the server, it saves this attribute to disk. There is no initial value.
<i>alternative_licservers</i>	A comma-separated list of alternative license servers. There is no initial value.
<i>billing_code</i>	A numeric value that appears in both the <i>fax_log</i> and the <i>accounting_log</i> . There is no initial value.
<i>cover_locus</i>	A comma-separated list describing where cover sheets are made. <b>Initial value:</b> <i>client</i> <b>Other value:</b> <i>server</i> Any other value or a missing value is interpreted as <i>client</i> . A default value is recommended.
<i>highest_priority</i>	The maximum priority at which this user is allowed to schedule faxes. (Lower numbers have higher priority.) <b>Initial value:</b> 3 <b>Other values:</b> 1-9
<i>hostname_override</i>	See “Attributes Used Only by PC Clients” on page 6-9.

---

Attribute	Definition and Values
<i>net_poll_interval</i>	<p>Defines how often, in seconds, this user is allowed to poll for the transmit queue information or the faxinbox daemon. A default value is recommended.</p> <p><b>Initial value:</b> 60</p> <p><b>Other values:</b> a number greater than zero</p>
<i>server_cover_list</i>	<p>A comma-separated list of the full paths to PostScript files available to this user as cover sheets. Full paths are recommended.</p> <p><b>Initial value:</b> <i>server_cover1.ps</i></p>
<i>server_cover_list_gui</i>	<p>A comma-separated list of strings describing each cover sheet in the <i>cover_list</i> attribute.</p> <p><b>Initial value:</b> "Sample Server Cover Sheet"</p>
<i>userid_override</i>	<p>See "Attributes Used Only by PC Clients" on page 6-9.</p>
<i>xmit_queue_list</i>	<p>A comma-separated list of outgoing queues into which the user is allowed to submit faxes.</p> <p><b>Initial value:</b> 1</p> <p><b>Other values:</b> 1-32</p>
<i>xmit_queue_list_gui</i>	<p>The numbers given must be valid <i>out_queue_num</i> attributes given in the <i>MODEMS.info</i> file.</p> <p>A comma-separated list of strings giving GUI names to each of the outgoing queue numbers that the user is allowed to query. The strings themselves must be exact copies of those given in the <i>incoming_gui</i> attributes in the <i>MODEMS.info</i> file.</p> <p><b>Initial value:</b> "Server Outbox"</p>

---

---

## Forwarding Attributes

The following attributes are presented together because they govern, as a group, if and how a user participates in fax-forwarding via the FaxInbox.

Attribute	Definition and Values
<i>fax_forwarding</i>	Boolean. This enrolls the user for routing and delivery (fax-forwarding) by the Designated Forwarder when using the <i>faxinbox</i> . Delivery method. The attribute <i>human_name</i> (if available) appears in the Designated Forwarder's list of users; otherwise, the <i>[user]</i> keyword appears. <b>Initial value:</b> <i>true</i> .
<i>forwarder</i>	A comma-separated list of strings describing the incoming directories for which the user is the Designated Forwarder. (Incoming faxes are delivered according to the Designated Forwarder's <i>delivery_method</i> .) An incoming directory can have only one designated forwarder, although a single user may be the designated forwarder for multiple directories. The strings themselves must be <b>exact</b> copies of those given in the <i>incoming_gui</i> attributes in the <i>MODEMS.info</i> file.  For further explanation, see "Selecting a Designated Forwarder " in Chapter 7, <i>The FaxInbox</i> .
<i>group</i>	This is a comma-separated list of <i>[user]</i> keys, which are assumed to appear elsewhere in the <i>USER_LIST.info</i> file. The designated forwarder may forward faxes to the entire group at once. There is no initial value.
<i>group_gui</i>	A GUI string describing or naming the group (the name of the group proper is in the key itself). There is no initial value.

---

---

## Routing Attributes

Currently, the only form of automatic routing supported by IsoFax is Direct Inward Dialing (DID). Accordingly, only a single attribute is required. In future fax technology, this attribute may contain an IP address or some other form of routing.

Attribute	Definition and Values
<i>routing_number</i>	User's autorouting number. Currently this number is required only if faxes are being routed via DID. (For more information on DID, refer to the <i>README.did</i> file in the <i>READMEES</i> directory of the IsoFax distribution.)

## Delivery Attributes

The following attributes are presented as a group because they govern whether and how a fax is delivered from the fax server's incoming directory to the user's computer.

Attribute	Definition and Values
<i>delivery_dir</i>	User's name of the user's server "inbox" directory; that is, a directory where faxes are accessible to the client. <ul style="list-style-type: none"><li>• If the value is a full path, <i>delivery_dir</i> completely specifies the inbox directory.</li><li>• If the value is a relative path, <i>delivery_dir_root</i> is prepended.</li><li>• If the attribute is null or not specified, the inbox directory is constructed from the user's name (characters other than a-z, A-Z, 0-9, -, and _ are stripped, and upper case characters are mapped to lower case).</li></ul>
<i>delivery_dir_root</i>	Root path to user's <i>delivery_dir</i> ( <i>delivery_dir_root</i> is ignored if <i>delivery_dir</i> is a full path). See "The [default] User" on page 6-4 for more information.

---

Attribute	Definition and Values
<i>delivery_method</i>	<p>The method of delivering the fax from the fax server's incoming directory to the client's.</p> <p><b>Initial value:</b>  <i>faxinbox</i>            Move into <i>delivery_dir</i></p> <p><b>Other values:</b>  <i>email_body</i>        Send in body of email  <i>sunmail_attach</i>    Implies uuencoding  <i>mimemail_attach</i> Implies base64 encoding  <i>exec</i>                Full path to a program that handles delivery</p> <p>In the <i>exec</i> method, the program is executed with three parameters: the path to the received fax, the destination directory, and the <i>[user]</i> entry via standard input. The default script is <i>route_fax</i>, provided in the distribution. To substitute a different script, use this syntax: <i>exec:/fullpath/to/script</i>.</p>
<i>delivery_body_encoding</i>	<p>The type of encoding desired when a <i>delivery_method</i> is <i>email_body</i>.</p> <p><b>Initial value:</b> <i>uuencode</i>  <b>Other value:</b> <i>base64</i></p>
<i>delivery_file_format</i>	<p>The file format into which the fax must be converted before delivery. If no value is given, no format conversion is performed.</p> <p><b>Initial value:</b>  <i>g3</i>            Deliver as a Bristol fax file in the Group 3 fax format</p> <p><b>Other value:</b>  <i>tiff_f</i>        Deliver as TIFF Class F file</p>

---

Attribute	Definition and Values
<i>delivery_naming</i>	How the selected method should transform the format of filename. If no value is given, no transformation is attempted. <b>Initial value:</b> <i>posix</i> for POSIX compliant file names <b>Other value:</b> <i>8.3</i> for DOS-style file names

---

For a discussion of how to administer a *USER\_LIST.info* file and example *[user]* entries, see “Administering *USER\_LIST.info*” in Chapter 9, *IsoFax Administration*.

## Authorization Attributes

The following attributes are used to restrict users’ ability to send faxes. See “Restricted Sending” in Chapter 9, *IsoFax Administration*, for more information.

Attribute	Definition and Values
<i>authorize_enable</i>	This boolean limits the ability to send faxes to users with entries in the <i>USER_LIST.info</i> file. If true, users without a valid entry in this file are unable to queue faxes. <b>Initial value:</b> <i>false</i>
<i>authorize_criteria</i>	If the <i>authorize_enable</i> attribute in the <i>[default]</i> record is true, this attribute contains a comma-separated list of the criteria by which a user attempting to queue faxes is qualified. There is no initial value—that is, membership in <i>USER_LIST.info</i> is the only authorization required. <b>Values:</b> <i>exclude</i> This user is prevented from queuing faxes, even if the <i>authorize_enable</i> variable is true. <i>hostname</i> The name of the host from which the fax is queued. This requires that the <i>[user]</i> record contain a valid <i>hostname</i> attribute. <i>userid</i> The userid of the user attempting to send the fax. This requires that the <i>[user]</i> record contain a <i>userid</i> attribute.

---

# 7

## THE FAXINBOX

---

This chapter, intended for the system administrator, explains how incoming faxes can be routed and delivered over a TCP/IP network, among a variety of platforms, without purchasing additional software.

Just as computer faxing is universally praised for its ease of sending faxes, it is also fairly criticized for its inability to identify the ultimate recipient of the fax, then deliver it. This problem arises from the very nature of faxing, which is analog telephone technology. Before we look at IsoFax's solution to the problem, it is important to understand the distinction between *routing* and *delivery*.

- **Routing** means identifying the ultimate recipient of a received fax.
- **Delivery** means transporting a fax from the incoming directory to the ultimate recipient.

---

## Fax Routing

In offices served by conventional fax machines, the most common method for routing is to have a designated person who reads the cover page of printed faxes.

## Manual Routing

Manual routing is analogous to the paper-office model, except that the designated person reads faxes from a computer screen instead of from paper. (The IsoFax name for this person is the “Designated Forwarder,” explained in detail later.)

## Sender-Supplied Routing Number

The facsimile protocol includes a 20-character destination *sub-address* field that would enable the sender to include the recipient’s routing information (for example, an email address) in the protocol information. Although this capability is promising, it is not widely supported either in fax machines or fax modems. When it becomes more widely used, IsoFax is ready to support it.

## Optical Character Recognition

Optical character recognition (OCR) software attempts to convert pictures of letters into the letters themselves. This technology is error-prone, even in high-resolution documents; in relatively low-resolution fax documents, which may contain errors induced by phone-line failures, OCR cannot be seriously considered as an automatic routing method.

Even if OCR technology were perfect, it could be employed for automatic routing only on documents where the recipient’s *exact* name appears precisely at a known location in the image. For these reasons, IsoFax does not support OCR routing directly, but lets you create your own OCR routing system if you wish.

---

## Direct Inward Dialing

Currently, the only reliable method of routing an incoming fax is Direct Inward Dialing (DID), where each recipient is assigned a unique telephone number. When configured with DID, IsoFax software receives this phone number at the same time as the incoming fax. IsoFax then scans the user profiles contained in the *USER\_LIST.info* file to identify the recipient of the fax. DID routing is foolproof and automatic, but does require special telephone service and hardware. IsoFax completely supports DID routing. For an explanation of how to install DID, refer to the *README.did* file.

## Fax Delivery

In a paper-office served by conventional fax machines, once the designated person knows who the recipient of the fax is, the next step is to deliver the fax; that is, to put the fax within the recipient's "reach."

## Manual Delivery

The manual delivery method is also analogous to the paper-office model: the computer fax is printed on paper, then hand-delivered to the recipient.

## File Sharing

On homogeneous networks, where all clients use the same underlying network topology and operating system, it is often possible simply to deliver the fax into a shared directory where the recipient can reach it. This is referred to as *file sharing*.

On heterogeneous networks, however, file sharing is sometimes not possible or not cost-effective—even where TCP/IP connectivity is already in place. For example, networks comprising a variety of PCs and Macintoshes internetworked via TCP/IP protocol "stacks" to a UNIX system are quite common. Adding the software necessary to share files among these fundamentally different file systems, however, could be prohibitively expensive, possibly a security risk, and certainly an administrative management problem.

---

## Network Transport Utility

Where file sharing is not available due to security concerns or other administrative reasons, network transport utilities (such as *ftp* and *rcp*) may be used to deliver the fax. Implementing this method can be frustrating, however, especially on heterogeneous networks where the behavior and functionality of the utilities are often substantially different.

## Email Delivery

Received faxes can be delivered by email. In the most basic form of email delivery, the fax is encoded using ordinary text characters (for example, *uuencode*), then simply included as the body of the email. Receiving faxes in this form is a cumbersome manual process of saving the email to a disk file, “clipping” out the fax portion, decoding the fax, and then manually launching the fax viewer.

A better approach is to deliver the fax via an email system that supports a standard method for handling binary images such as faxes. A good example of such a method is MIME (Multimedia Internet Mail Extensions), a standard for encoding and attaching binary images to ordinary text-based email. This system works quite well if the mail reader has the ability to transparently remove the MIME encoding, then launch the appropriate fax viewer. Delivery by email is described at the end of this chapter in the section “Designated Forwarding with Email.”

## The FaxInbox: Routing and Delivery

IsoFax’s FaxInbox system combines both routing and delivery in one integrated framework. That is, the FaxInbox lets you designate an ordinary user to view incoming faxes and to deliver them to one or more individual recipients or to named groups. Furthermore, each individual may choose a different method for delivery—all configurable on the server—by editing the user database file *USER\_LIST.info*.

FaxInbox is self-sufficient: it does not require file-sharing or other additional software beyond basic TCP/IP connectivity.

---

## FaxInbox Routing: The Designated Forwarder

In the absence of DID or some other method that automatically identifies the recipient of a received fax, the most common method for routing faxes is the manual method mentioned above. In FaxInbox, an ordinary user, known as the *Designated Forwarder*, can view every received fax for the purpose of identifying the recipient.

In all client programs that support FaxInbox, the *Route Faxes* option on the File menu is active *only* for the Designated Forwarder. Choosing this option displays a list of possible recipients and groups; at the same time, a fax viewer is launched to view the faxes in the fax server's incoming directory.

After reading the cover page to learn the recipient, the designated forwarder selects one or more recipients from the list then, clicks the Deliver button, which:

1. Automatically forwards the fax to the server "inboxes" of all selected recipients. (FaxInbox automatically creates an "inbox" on the fax server for every participating user.)
2. Deletes the fax from the server's incoming directory.
3. Selects and displays the next fax for routing.

## FaxInbox Delivery: Receiving Faxes

Users enrolled in FaxInbox receive faxes in much the same way they receive email. Users are automatically notified when a fax has been forwarded to their "inbox" on the fax server. (The method of notification varies with the user interface.)

On some operating systems, faxes are automatically delivered from the server's inbox to a directory on a user's computer. On other systems, the user clicks a button that causes the delivery. In either case, the fax ultimately arrives on the client machine where it can be viewed and manipulated. Once safely received on the client machine, the fax is deleted from the user's inbox on the server.

---

## Setting Up FaxInbox

Only three steps are required to set up FaxInbox : create an entry for each user, select a user to become designated forwarder, and start the FaxInbox daemon.

### Creating a User Entry

All FaxInbox users must have an entry in the *USER\_LIST.info* file. (A complete explanation of *[user]* is found in Chapter 6, *User Configuration*, but for now, we'll use an intuitive example.)

A user who already runs a PC client must have an entry in the *USER\_LIST.info* file. If not, create an entry by typing the user's name in square brackets on a line by itself. Names are restricted to letters, numerals, and the underscore ('\_') character. Letter case is ignored. Punctuation and white space may be added for clarity, but are ignored by FaxInbox.

If the user's computer runs UNIX, then put his *userid* inside square brackets. Here are some examples of user names:

```
[bobc]           # unix uid
```

Note that due to the naming rules just mentioned, a PC user with the name

```
[Robert Cather]
```

would be identical to the name

```
[robertcather]
```

### Enrolling a User in Fax-Forwarding

Unless you have altered the *[default]* record in the *USER\_LIST.info* file, every entry **automatically** inherits two important attribute-value pairs:

```
fax_forwarding = true  
delivery_method = faxinbox
```

The former makes the user's name appear on the Designated Forwarder's routing list, and the latter tells FaxInbox to put the fax in the user's server "inbox, " and also enables the client software to fetch the fax from the server.

---

When *faxinboxd* runs, it automatically creates inbox directories on the fax server for each user. Unless the user's *delivery\_dir\_root* attribute provides an explicit path, the inboxes are created in the main IsoFax directory. The name of the inbox directory is derived from the user's name in *USER\_LIST.info*.

## Selecting a Designated Forwarder

The designated forwarder can be any user, but clearly that user should also be an employee who can be entrusted with the responsibility of reading everyone's faxes. When you have selected such a user, add the following to the user's record in the *USER\_LIST.info* file:

```
forwarder = General Incoming
```

In the example above, *General Incoming* is the initial *incoming\_gui* value for all incoming directories in the *MODEMS.info* file. If you have changed the *incoming\_gui* name, use the new name in place of *General Incoming*.

The next time this user starts an IsoFax client program, the Route Faxes option will appear on the File menu as explained earlier.

---

**Note:** There can be only one designated forwarder per incoming directory. A different designated forwarder, however, can be assigned to each incoming directory.

## Starting the FaxInbox Daemon

The fax server automatically starts the FaxInbox daemon *faxinboxd*, which automatically reads the *USER\_LIST.info* file and creates a *faxinbox* directory for each user whose delivery method is *faxinbox*.

To prevent the fax server from starting the FaxInbox daemon:

1. Edit the server configuration file and set the *USE\_FAXINBOX* variable to *NO*.
2. Kill then restart the fax server (*faxd*).

---

## Using DID and FaxInbox Together

When used together, DID and FaxInbox combine autorouting and cross-platform delivery of incoming faxes. The following is an example of a *USER\_LIST.info* entry:

```
[user_name]
  delivery_method = faxinbox
  delivery_number = 1234      # DID number
```

When the IsoFax DID software receives a fax, it also receives the phone number dialed. The DID software searches the *USER\_LIST.info* for the user whose *delivery\_number* matches the number dialed (in this case 1234). Relying on the *delivery\_method* specified in the user record, the DID software then places the incoming fax in the user's faxinbox directory (*delivery\_dir*).

---

**Note:** Adding the line `faxforwarding = false` would prevent this user from appearing on the designated forwarder's list. This is advisable only if all faxes in the company are auto-routed via DID.

## Setting Up Email Routing

As described earlier, you may elect not to use the Faxinbox routing and delivery mechanism and simply forward all incoming email to the designated forward via email. In this case, the forwarder uses an email viewer to identify the recipient (that is, to *route*) the delivers the faxes via email.

When *faxinboxd* runs, it automatically creates inbox directories on the fax server for each user. Unless the user's *delivery\_dir\_root* attribute provides an explicit path, the inboxes are created in the main IsoFax directory. The name of the inbox directory is derived from the user's name in *USER\_LIST.info*.

---

## Designated Forwarding with Email

Forwarding via email is implemented simply by changing the Designated Forwarder's *delivery\_method* from *faxinbox* so one of the email methods. For example, changing the Designated Forwarder's record to:

```
delivery_method = mimemail_attach
```

results in all incoming faxes to be forwarded to the Designated Forwarder as a email MIME attachment. Please note that any valid *delivery\_method* may be employed.

---

**Note:** To avoid the Designated Forwarder's receiving both a fax email attachment *and* email notification, make certain that the *when\_to\_notify* attribute does **not** include the *fax\_incoming* value.

It is possible to have a variety of forwarding and delivery methods simultaneously in use. For example, you may declare two incoming directories and assign a *delivery\_method* of *Faxinbox* for one directory's forwarder and *mimemail\_attach* for the other.



# 8

## FAX TOOLKIT

---

The IsoFax toolkit is a suite of modular, command line utilities that let a programmer write custom fax applications without having to understand the underlying fax process. The fax toolkit consists of three main programs:

- *enfax*, which converts files to the Bristol IsoFax fax format.
- *sendfax*, which copies Bristol IsoFax format fax files to the fax server for transmission.
- *printfax2*, which prints IsoFax faxes (*Unix*).
- *ntprint*, which prints IsoFax faxes (*NT*).

In addition to the three main programs, the fax toolkit contains several utility programs for manipulating files in several popular standard formats. The general utility programs include: *checkfax*, *deletefax*, *faxpoll*, *splitfax*, *texttops*, *brfilter*, *faxtotiff*, and *tifftofax*, *faxinfo*, *find\_license\_server*, *find\_fax\_server*, and *faxtosun*.

---

The toolkit programs accept command line arguments, so you can use them in scripts. For example, if you wish to send a text file named *file.txt* to the phone number 555-9250. A simple script using the IsoFax toolkit would look like this:

```
enfax file.txt file.fax
sendfax file.fax 555-9250
```

---

**Note:** Running any of the toolkit main or utility programs with the *-help* switch displays their version numbers and syntax descriptions.

This chapter describes all the Fax Toolkit programs. It also covers the toolkit exit codes and using the toolkit to print from an application.

## enfax

The *enfax* program converts text, Raster (on the Sun), PostScript and Alchemy output files into Bristol IsoFax fax files (see Appendix C, *Bristol File Formats*, for a technical description of this format). You can also use *enfax* to attach a cover sheet to the final fax.

### Command Syntax

The command syntax for *enfax* is

```
% enfax [-switches] infile1 infile2 infile. . . outfile
```

*enfax* accepts up to 1000 input files and produces a single output file in the IsoFax fax format. Input files can be ASCII text files, tiff files, PostScript files, or files already in the IsoFax fax format. Using the optional Alchemy filter pack (Unix only), *enfax* accepts input files in a host of other formats as well. see “brfilter and the Alchemy Filter Pack” on page 8-37 for more details.

---

## Command Switches

You can use the general, filter pack, per-file, datamerge, and command file switches with *enfax*.

### General Switches

<code>[-2]</code>	Produce fine resolution faxes
<code>[-b]</code>	One short file per page, no margin at top
<code>[-b2]</code>	Same as <i>-b</i> , but normal length pages
<code>[-b3]</code>	No margin at top of PostScript documents
<code>[-bg file]</code>	Use <i>file</i> as a background overlay for all pages
<code>[-cmdfile file]</code>	Get switches from <i>file</i> ; requires <i>-in</i> and <i>-out</i>
<code>[-fpl page_length]</code>	Length of fax pages, in inches (default 11)
<code>[-help]</code>	Displays syntax and version number
<code>[-H]</code>	Import Sun Raster files at 196 dpi
<code>[-kb]</code>	Keep blank space at bottom of documents
<code>[-nobreak]</code>	Do not break long text lines between words
<code>[-rh]</code>	No header (top margin) at top of image files
<code>[-ro 90]</code>	Rotate image ninety degrees
<code>[-tps]</code>	Convert text to PostScript before processing
<code>[-B AddressBookPath]</code>	Full path to Address book
<code>[-MH]</code>	Use 1-D (Modified Huffman) encoding (default)
<code>[-MR]</code>	Use 2-D (Modified READ) encoding
<code>[-MMR]</code>	Use 2-D (Modified-modified READ) encoding
<code>[-N AddressBookEntry]</code>	Name of person in Address book
<code>[-s license_server]</code>	Name of host running license server
<code>[-z iso_mapping_table]</code>	

---

The *-2* switch causes *enfax* to generate a high resolution (204 x 196 dpi) fax file. Without this switch, *enfax* generates a standard resolution (204 x 98 dpi) fax. Note that high resolution faxes take twice as much room to store and twice as long to send.

The *-b* switch maps one file to a single page with the following characteristics:

- No margins at top.
- White space removed from bottom of page.
- A page possibly less than eleven inches in length.

The *-b2* switch works the same as *-b* except that it retains the white space at the bottom of the page.

The *-b3* switch puts a margin at the top of text and image files but no margin at the top of PostScript files. It also removes all blank space at the bottom of all documents. Thus, two short documents are kept on the same page. In essence, this switch makes *enfax* behave exactly like IsoFax/MX.

The *-bg* switch specifies a file that is overlaid on every page of the output fax. If the document submitted for background consists of more than one page, only the first page is used.

The *-cmdfile* switch tells *enfax* to get its commands and switches from a file rather than from the command line. When command line input is used simultaneously with a command file, the command line overrides the command file. The *-cmdfile* switch must be used with either the *-in* or *-out* switches. See “Using Command Files” on page 8-13 for a more detailed discussion of using command files with *enfax*.

The *-fpl* switch sets the length of the fax page. You can supply a specific length in inches or use the default of 11 inches. This switch is useful if you are sending to plain paper fax machines.

The *-H* switch applies only to Sun Raster files. *enfax* determines if a particular file is a Sun Raster file by looking for the number 0x59a66a65 encoded in the first four bytes. Raster files with the extension *.2* (for example, *flag.2*) are interpreted at 196 pixels-per-inch. Otherwise, files are interpreted at 98 pixels-per-inch. The *-H* switch forces *enfax* to interpret all Sun Raster files at 196 pixels-per-inch.

---

The following table illustrates how the *-2* and the *-H* switches work together. The *-H* switch determines how many pixels of the Raster file will fit in one inch of fax output, regardless of the resolution (*-2* switch). The input is assumed to be a 1000 x 1000 pixel Raster file.

<i>-2</i>	<i>-H</i>	Size of the Resulting Image on the Fax Page
No	No	10 inches x 10 inches
No	Yes	5 inches x 5 inches
Yes	No	10 inches x 10 inches
Yes	Yes	5 inches x 5 inches

The *-kb* switch alters the behavior of the *-b3* switch by retaining the blank space at the bottom of documents. Two other switches that affect *-b3* are *-rh* and *-pb*, described later in this section.

The *-nobreak* switch prevents breaking of lines at word boundaries.

The *-rh* switch suppresses the margin at the top of the image. This switch works in conjunction with the *-b3* switch.

The *-ro* switch rotates Sun Raster and Alchemy files by 90 degrees. The switch requires the 90 argument (the only rotation currently supported); the syntax is as follows:

```
% enfax -ro 90 infile outfile
```

The *-tps* switch converts an ASCII input file to PostScript, using an average-looking 10-point font. If your job requires more control, such as a different font or spacing, use the *texttops* program described on page 8-34.

The *-B* switch specifies the path for a specific address book that *enfax* should use for locating a specific name (from the *-N* switch). If you do not enter a *-B* switch, *enfax* searches the current directory.

The *-MH*, *-MR*, and *-MMR* switches control the type of data compression used: one-dimensional Modified Huffman, two-dimensional Modified READ, and two-dimensional Modified-modified READ. The *-MR* switch should be used only if your modems support two-dimensional encoding. The *-MMR* switch should never be used to create files for faxing, only for data storage or interchange.

---

The *-N* switch extracts a name field entry from the address book specified by the *-B* switch. The name you use with this switch must be identical to the one in the address book name field, otherwise, the match fails. This switch takes only a single name.

---

**Note:** If *enfax* cannot find an entry matching the name specified, it reports an error and exits.

The *-s* switch names the machine on which the license server (*blserver*) is running; otherwise, *enfax* assumes the local computer.

The *-z* switch specifies a map file for cover sheet substitutions using 8-bit (that is, non-ASCII) characters. The map file you choose depends on the application used to generate the cover sheet. The default mapping used by *enfax* is intended for Framemaker documents. To disable all mapping, use the keyword *NONE* directly after the *-z* switch.

A sample map file named *iso\_to\_maker* is supplied with IsoFax. Because this file is based on Framemaker, it corresponds exactly to the default behavior of *enfax*. Instructions for producing similar files for other applications are also included in the sample file.

---

## Filter Pack Switches (Unix only)

<code>[-al]</code>	Force use of Filter Pack for all formats
<code>[-aldx]</code>	X-axis resolution of input image
<code>[-aldy]</code>	Y-axis resolution of input image
<code>[-ald]</code>	X- and Y-axis resolution of input image

The `-al` switch causes *enfax* to use the optional Alchemy Filter Pack for all imported files except those already in the IsoFax fax format. You rarely need this switch since *enfax* knows when to use the filter pack and does so only when the file being imported is not one of the standard import types. If, however, you are having difficulty getting acceptable results using this method, try the Alchemy filter pack. (See “brfilter and the Alchemy Filter Pack,” on page 8-37.)

The `-aldx` and `-aldy` switches specify the X and Y resolution of the input image in dots per inch, respectively.

The `-ald` switch specifies the resolution of the input image in dots per inch for both X and Y axes simultaneously.

## Per-File Switches

<code>[-overl]</code>	Overlay next input file over previous one
<code>[-pb]</code>	Insert page break before next input file

The `-overl` switch overlays two input files. The second file is put on top of the first input file; the syntax is as follows:

```
% enfax infile1 -overl infile2 outfile
```

The `-pb` switch inserts a page break between input. When you use this switch, *enfax* inserts a page break before the next file on the command line; the syntax is as follows:

```
% enfax infile1 -pb infile2 -pb infile3 outfile
```

---

## Datamerge Switches

Several of these switches are used to insert specific information in a fax when the program encounters an escape sequence in the input file. See Chapter 14, *Creating Custom Cover Sheets*, for a complete list of these escape sequences.

```
[-a1 recip_addr_1] [-a2 recip_addr_2]
[-A1 sender_addr_1] [-A2 sender_addr_2]
[-e recip_email_addr] [-E sender_email_addr]
[-g recip_dept] [-G sender_dept]
[-h letter_intro]
[-i fax_ID]
[-m recip_mailstop] [-M sender_mailstop]
[-o recip_org] [-O sender_org]
[-p recip_fax_phone] [-P sender_fax_phone]
[-r recip_name] [-R sender_name]
[-S Subject]
[-v recip_voice_phone] [-V sender_voice_phone]
```

The *-a1* and *-a2* switches specify recipient address information, which is inserted in the fax whenever the appropriate ASCII or PostScript sequence is encountered.

The *-A1* and *-A2* switches specify sender address information, which is inserted in the fax whenever the appropriate ASCII or PostScript sequence is encountered.

The *-e* switch specifies the recipient's email address information, while the *-E* switch specifies the sender's email address. This information is inserted in the fax whenever the appropriate ASCII or PostScript sequence is encountered.

The *-g* switch specifies the recipient's department information, while the *-G* switch specifies the sender's department address. This information is inserted in the fax whenever the appropriate ASCII or PostScript sequence is encountered.

The *-h* switch lets you enter a salutation string (for example, 'Dear Dr. Richards,' or 'Dear Ms. Moncrief'), which *enfax* includes on the cover page. If you use this switch and don't enter a specific *letter intro*, the salutation defaults to 'Dear XXXX,' where XXXX is the recipient's first name.

The *-i* switch specifies a *fax\_id*, an arbitrary string that gets logged in both *fax\_log* and the accounting logs.

---

The *-m* switch specifies the recipient's mailstop, while the *-M* switch specifies the sender's mailstop. This information is inserted in the fax whenever the appropriate ASCII or PostScript sequence is encountered.

The *-o* switch specifies the recipient's organization, while the *-O* switch specifies the sender's organization. This information is inserted in the fax whenever the appropriate ASCII or PostScript sequence is encountered.

The *-p* switch specifies the recipient's fax phone number, while the *-P* switch specifies the sender's fax phone number. This information is inserted in the fax whenever the appropriate ASCII or PostScript sequence is encountered. The maximum permissible length is 51 characters.

The *-r* switch specifies the recipient's name, while the *-R* switch specifies the sender's name. This information is inserted in the fax whenever the appropriate ASCII or PostScript sequence is encountered. The maximum permissible length for both is 99 characters.

The *-S* switch specifies the subject of the fax, which is inserted in the cover sheet, if applicable.

The *-v* switch specifies the recipient's voice phone number, while the *-V* switch specifies the sender's voice phone number. This information is inserted in the fax whenever the appropriate ASCII or PostScript sequence is encountered. The maximum permissible length of each is 51 characters.

### Command File Switches

`-in infile0... -out outfile`      Use with *-cmdfile*

*-or-*

`infile0 infile1 ... outfile`      Old, for backward compatibility

---

## Switches for *enfaxx* Only

<code>[-f font]</code>	X-font for imaging text files
<code>[-q]</code>	Quiet error message about missing X-server

---

Note: For more information about *enfaxx*, see page 8-16.

## Using Command Files

You can pass arguments to *enfax* from the command line, from a command file, or from both. If instructions in the command file and on the command line conflict with one another, the command line takes precedence.

Using command files lets you set up a file of default commands for *enfax* (such as cover sheet, sender name, and email address), which you then pass to *enfax* with only one switch. You don't have to type the individual options on the command line unless you want to override the defaults by supplying different information on the command line.

To pass a command file to *enfax*, use the *-cmdfile* switch and preface all other input and output filenames with the *-in* and *-out* switches respectively. Input and output filenames may be entered on the command line, in the command file, or in both places.

The structure of the command file is as follows:

- Lines beginning with *#* are comments.
- The syntax of the command in the file is the same as the syntax on the command line. Line breaks are ignored.
- The switches *-in* or *-out* must precede all input or output filenames respectively.

The following example uses a command file and input and output files on the command line:

```
% enfax -cmdfile /home/fred/command_file \  
-N "Sue Johnson" \  
-in /home/fred/foo.txt \  
-out/home/fred/faxes/Sue_Johnson.1
```

---

The command file */home/fred/command\_file* contains these lines:

```
# My command to enfax
-B /home/fred/
-S "The information you requested" -R "Fred LaMortique"
-A1 "100 Farmers Lane" -A2 "Pleasantville, PA"
-V "215 555-1256" -P "215 555-1278" -E fred@turnip.org
-in /home/fred/COVER_SHEET.PS
```

The command file specifies an address book, which is assumed to be *fax\_phones* (-B); a generic subject line (-S); the sender's name (-R), address (-A1 and -A2), telephone and fax numbers (-V and -P), email address (-E); and a cover sheet (-in). The command line adds the recipient's name (from the address book specified in the command file), another input file, and an output file.

## enfaxx (Unix only)

In earlier releases of IsoFax (pre-6.2), *enfax* required an X Server to convert ASCII text into fax format. Since release 6.2, *enfax* uses a default font for this conversion and no longer requires an X Server. If you do not like this font, you can use PostScript to specify a font, *or* if you also have a valid X Server running, you can use *enfaxx* to use X Server screen fonts.

Before using *enfaxx* to convert files to Bristol fax file format, you must complete three steps:

1. Make sure you have a valid X Server.
2. Set the DISPLAY environment variable to the name of the X Server. In a C shell, you would set it as follows:

```
% setenv DISPLAY myxmachine:0
```

where *myxmachine* is the name of your machine.

3. Execute the following command on the machine acting as the X Server:

```
% xhost +
```

---

The *enfaxx* program follows the same syntax as *enfax* and accepts all the same switches, as well as the following two:

```
[-f font]
[-q]          quiet error message about missing X server
```

The *-f* switch defines an initial X-font for encoding ASCII text files.

The *-q* switch suppresses error messages in *enfaxx* when no X server is present.

---

**Note:** If *enfaxx* cannot locate a functioning X Server on your network, it automatically behaves the same as *enfax*.

## sendfax

The Fax Toolkit program *sendfax* copies a fax from its current location into the fax server's outgoing fax queue. *sendfax* communicates over the network with *faxit*, a helper program that runs on the fax server. Once the fax is queued, the fax server daemon (*faxd*) takes responsibility for its delivery.

## Command Syntax

The command syntax for *sendfax* is

```
% sendfax [-switches] infile [phone1 phone2. . . phoneN]
```

The *sendfax* switches are described below. The *infile* file is the fax file to be sent, which must be in the IsoFax fax format (such as those automatically produced by *enfax*). An unlimited number of phone numbers can be specified on the command line. The maximum permissible length of each phone number is 51 characters.

---

## Command Switches

You can use the following switches with *sendfax*:

<code>[-c]</code>	Assigns a billing code to appear in the accounting log
<code>[-e email_addr]</code>	Email address for notification
<code>[-f fax_servername]</code>	Overrides the <code>-s</code> switch below if the fax server resides on a different host
<code>[-H]</code>	Prints a terse status handle message to stdout for use with <i>checkfax</i>
<code>[-h]</code>	Same as <code>-H</code> , but prints a verbose message to <i>stderr</i>
<code>[-p]</code>	Priority, defaults to 5
<code>[-q]</code>	Fax server queue number, defaults to 1
<code>[-r recipient]</code>	Name of recipient
<code>[-s servername]</code>	Host for both fax and license servers
<code>[-tr tracking id]</code>	Assign a tracking id
<code>[-td mm/dd]</code>	Specifies a sending date
<code>[-tt hh:mm]</code>	Specifies a sending time

The `-c` switch specifies a billing code for inclusion in the accounting log. The maximum permissible length is 51 characters.

The `-e` switch passes an electronic mail address to the fax server. This email address is used to notify you of the success or failure of the fax delivery. You can ask *sendfax* to notify multiple email addresses by entering them after the `-e` switch separated by commas, with no spaces (for example, *nadine@banana,kelly@grape*). The maximum permissible length is 99 characters.

The `-f` switch specifies the name of the host machine on which the fax server (*faxd*) resides. If you do not include this switch, *sendfax* assumes the fax server is on your local workstation. This switch overrides the `-s` switch if the fax and license servers do not reside on the same host.

---

The *-h* and *-H* switches are used with the programmer's tools *checkfax* and *deletefax* to provide status information about the fax. The *-h* switch sends a verbose message to *stderr*; for example, "Your fax handle status is C\_12345678\_0." The *-H* switch sends a short version of the same message to *stdout*; for example, "C\_12345678\_0."

The *-p* switch defines the fax's priority in the fax server's outgoing queue. The default value is 5.

The *-q* switch defines the number of the outgoing queue. The default value is 1. (See Chapter 9, *IsoFax Administration*, for a discussion of multiple outgoing queues.)

The *-r* switch specifies the name of the recipient as it appears in the *fax\_log* file. If the *-r* switch is omitted, *sendfax* tries to extract the recipient name from the header of the fax being sent. The maximum permissible length is 99 characters.

The *-s* switch specifies the name of the host machine where both the fax server (*faxd*) and the Bristol license server (*blserver*) reside.

The *-tr* switch lets you assign a tracking ID to outgoing faxes. The tracking ID is logged in the *fax\_log*, the *accounting\_log*, and in the notification email. The maximum permissible length is 19 characters.

The *-tt* and *-td* switch specify the time and date to send the fax. The time must be entered in 24-hour format (hours and minutes only) and the date in month/day format, as shown in this example:

```
% sendfax -tt 18:15 -td 10/23
```

This command line sends a fax at 6:45 p.m. on October 23.

---

## Return Codes from *sendfax*

The following is a list of the return codes generated by *sendfax*:

Return Code	Description
0	Fax successfully spooled
1	General syntax error
3	No license server
4	No license available
5	Unauthorized client
6	Fax server permission problem
7	Obsolete fax server error
8	Not a fax file
9	Invalid fax file
10	Communication problem with other IsoFax client
11	Couldn't find fax to send
12	Couldn't get local <i>hostname</i>
13	Invalid parameter combination for <i>-b</i> and <i>-n</i> switches
14	Syntax error with <i>-N</i> switch
15	Problem while looking for fax inclusions
16	Couldn't open fax to send
17	No fax server on specified host
18	Connected to fax server, but queuing request failed
19	Invalid response to queuing request
20	No fax server (when trying to send a fax inclusion)
21	Obsolete
22	Obsolete
23	Obsolete
24	Obsolete
25	Obsolete

---

---

## printfax2 (Unix only)

The *printfax2* program lets you print all or part of a fax. It reads a Bristol format fax file and generates a PostScript or PCL Raster description of the selected fax pages.

### Command Syntax

The command line syntax for *printfax2* is as follows:

```
% printfax2 [-switches] fax_filename
```

When no command line switches are specified, *printfax2* executes the default command *lpr* on SunOS and *lp* on all other platforms. Switches are optional, but the *fax\_filename* is required.

Although *printfax2* is primarily intended as a printing tool, its command syntax provides great flexibility in redirecting the PostScript data to other types of output such as a file, another program's input, and so forth.

### Command Switches

You can use the following command switches with *printfax2*:

<code>[-center_x]</code>	<b>Center horizontally</b>
<code>[-center_y]</code>	<b>Center vertically</b>
<code>[-cl print_command_line]</code>	
<code>[-cm compress_pages]</code>	
<code>[-cr crop_long_pages]</code>	
<code>[-f print_to_filename]</code>	
<code>[-lj]</code>	<b>For HP LaserJet</b>
<code>[-p1 from_page]</code>	
<code>[-p2 to_page]</code>	
<code>[-pr printer_name]</code>	
<code>[-s license_server]</code>	
<code>[-scale {&lt;scale_factor&gt;   "fit_on_page"   "no_alias"   "4_per_page"}]</code>	
<code>[-w paper_width]</code>	<b>In inches</b>
<code>[-l paper_length]</code>	<b>In inches</b>
<code>[-x x_offset]</code>	<b>In inches</b>
<code>[-y y_offset]</code>	<b>In inches</b>

---

The `-center_x` and `-center_y` switches let you center the printed output on the page. For more precise horizontal and vertical positioning, use the `-x` and `-y` switches described below. By default, the output is centered horizontally and offset 0.2 inches vertically from the top of the page (equivalent to `-y 0.2`).

The `-cl` switch lets you specify a complete UNIX command to be executed with the PostScript output of `printfax2`. If your command contains any spaces, make sure that you enclose it in quotes. For example, you can redirect the `printfax2` output to a file with the following command line:

```
% printfax2 -cl "cat > filename" fax_filename
```

In this case, `"cat > filename"` is the argument to the `-cl` switch and is enclosed in quotes because it contains two spaces. You can redirect the `printfax2` output to the input of another program with the following command line:

```
% printfax2 -cl "cat | prog_name" fax_filename
```

Or, you can redirect the PostScript data to your `stdout` with the command line:

```
% printfax2 -cl cat fax_filename
```

The default value for the `-cl` switch is `lpr` on SunOS, `lp` on all other platforms. The `-cl` switch overrides the `-pr` switch described below.

The `-cm` switch lets you compress the PostScript data before sending it to the printer. The argument `compress_pages` should be set to `0` for no compression or to `1` for compression. The default setting is `0`. As with IsoFax/MX and FaxTerm, use the compressed format if you have a fast PostScript printer and a relatively uncluttered fax (for example, text, no halftone images). Use the regular format if you have a slow PostScript printer (for example, LaserWriter Plus) and/or a high-speed channel between the print server and printer (> 2000 characters per second, or 20000 baud).

The `-cr` switch lets you specify whether pages longer than those specified by the `-w` switch should be printed as multiple sheets or be cropped. Set the argument `crop_long_pages` to `0` for multiple sheets or to `1` for cropping. The default is `0`.

---

The *-f* switch lets you send the output of the print command to a file instead of to a printer. For example:

```
% printfax2 -f /tmp/print_output my_fax
```

The *-lj* switch lets you specify an HP LaserJet protocol printer. The default is the PostScript print protocol.

The *-p1* and *-p2* switches let you specify the first and last pages of your fax to be printed. The arguments *first\_page* and *last\_page* should be page numbers between 1 and the number of pages in the fax. The default is page 1 for *first\_page* and the last page of your fax for *last\_page*. For example:

```
% printfax2 -p1 3 -p2 5 fax_filename
```

prints pages three, four, and five of the fax *fax\_filename*.

The *-pr* switch lets you specify a printer name. It is, in a way, a subset of the *-cl* switch. The command to be executed, however, is still *lpr* on SunOS and *lp* on all other platforms. For example,

```
% printfax2 -pr lw fax_filename
```

executes the command *lpr -Plw* (SunOS) or *lp -dlw* (other platforms). The *-cl* switch described above overrides this switch.

The *-s* switch tells *printfax2* the name of the host machine running the license server. If this is omitted, *printfax2* looks on your current machine.

---

The *-scale* switch lets you specify a scale factor for the printed output. The switch accepts one of four arguments:

- A percentage
- The pre-defined keyword *fit\_on\_page* to fit the output on the specified paper size
- The pre-defined keyword *no\_alias* to image at 204 x 198 dpi (exact fax resolution)
- The pre-defined keyword *4\_per\_page* to display four fax pages per sheet (scaled down roughly 50%)

The keywords can be abbreviated. The default scale factor is 97%, allowing a small margin between the edges of the fax and the edges of the paper.

### **Examples**

```
% printfax2 -scale 65 my_fax           (percentage: 65%)
% printfax2 -scale 102.5 my_fax       (percentage: 102.5%)
% printfax2 -scale fit my_fax         (fit_on_page)
% printfax2 -scale no my_fax          (no_alias)
% printfax2 -scale 4_per my_fax       (4_per_page)
```

The *-w* and *-l* switches define the paper size you are using (width and length). With that information, *printfax2* knows where to divide the output if necessary or how to make the output fit on the page if you use the *-scale fit\_on\_page* option. The arguments to these switches are specified in inches. The defaults are 8.5 for the *-w* switch (width) and 11.0 for the *-l* switch (length).

The *-x* and *-y* switches let you position the output on the page. The arguments to these switches are specified in inches, measured from the left and top edges of the page. By default, the output is centered horizontally and offset 0.2 inches vertically from the top of the page. To center the output on the page, use the *-center\_x* and *-center\_y* switches described earlier.

## **ntprint (nt only)**

The Fax Toolkit program *ntprint* lets you print all or part of a fax. It reads a Bristol format fax file and submits selected pages to the default system printer or the printer named in the argument list.

---

## Command Syntax

The command line syntax for *ntprint* is

```
% ntprint [-switches] fax_filename
```

## Command Switches

This section describes the command for *ntprint*.

```
[-cr crop_long_pages]
[-f print_to_filename]
[-p1 from_page]
[-p2 to_page]
[-pr printer_name]
[-s license_server]
[-scale {<scale_factor> | "fit_on_page" | "no_alias" |
"4_per_page"}]
[-w paper_width]           In inches
[-l paper_length]         In inches
[-x x_offset]             In inches
[-y y_offset]             In inches
```

The *-cr* switch lets you specify whether pages longer than those specified by the *-w* switch should be printed as multiple sheets or be cropped. Set the argument *crop\_long\_pages* to *0* for multiple sheets or to *1* for cropping. The default is *0*.

The *-p1* and *-p2* switches let you specify the first and last pages of your fax to be printed. The arguments *first\_page* and *last\_page* should be page numbers between *1* and the number of pages in the fax. The default is page *1* for *first\_page* and the last page of your fax for *last\_page*. For example:

```
% ntprint -p1 3 -p2 5 fax_filename
```

prints pages three, four, and five of the fax *fax\_filename*.

The *-pr* switch lets you specify a printer name. For example,

```
% ntprint -pr "Laserwriter II NTX" fax_filename
```

---

The `-s` switch gives the name of the host machine running the license server. If this is omitted, *ntprint* looks on the local machine.

The `-scale` switch lets you specify a scale factor for the printed output. The switch accepts one of four arguments:

- A percentage
- The pre-defined keyword *fit\_on\_page* to fit the output on the specified paper size
- The pre-defined keyword *no\_alias* to image at 204 x 198 dpi (exact fax resolution)
- The pre-defined keyword *4\_per\_page* to display four fax pages per sheet (scaled down roughly 50%)

The keywords can be abbreviated. The default scale factor is 97%, allowing a small margin between the edges of the fax and the edges of the paper.

### **Examples**

```
% ntpoint -scale 65 my_fax           (percentage: 65%)
% ntpoint -scale 102.5 my_fax       (percentage: 102.5%)
% ntpoint -scale fit my_fax         (fit_on_page)
% ntpoint -scale no my_fax          (no_alias)
% ntpoint -scale 4_per my_fax       (4_per_page)
```

The `-w` and `-l` switches tell *ntprint* the paper size you are using (width and length). With that information, *ntprint* knows where to divide the output if necessary or how to make the output fit on the page if you use the `-scale fit_on_page` option. The arguments to these switches are specified in inches. The defaults are 8.5 for the `-w` switch (width) and 11.0 for the `-l` switch (length).

The `-x` and `-y` switches let you position the output on the page. The arguments to these switches are specified in inches, measured from the left and top edges of the page. By default, the output is centered horizontally and offset 0.2 inches vertically from the top of the page. To center the output on the page, use the `-center_x` and `-center_y` switches, described above, instead.

---

## General Utilities

The following utilities support the activities of three main IsoFax toolkit programs. These programs let you fine tune your IsoFax usage.

### faxtolist

```
faxtolist -d doc -b book -l dlname [-c coversheet] \  
        [-e enfax_sws] [-s sendfax_sws]
```

*Faxtolist* is a convenient utility for sending a fax to everyone on a distribution list. The distribution list format is simple and is defined in Appendix C.

*Doc* is the full path to the document for faxing. It should already be in IsoFax fax format, as produced by *enfax*, but can be a PostScript or other imagable file, though this will be less efficient and more error-prone.

*Book* is the path to an isofax address book, and *dlname* is the name of a distribution list in the associated *book.dlists* (*book.DST* for Windows NT). Please refer to Appendix C for details.

*Coversheet* is that path to a standard IsoFax cover sheet as defined in Chapter 14. *Enfax\_sws* and *sendfax\_sws* are “per-file” switches that are passed on to *enfax* and *sendfax*, respectively, to allow custom behavior.

### rfax

The *rfax* utility provides remote client faxing capability. It allows documents to be dropped into a monitored directory from a mainframe or PC, then automatically acquired and spooled for faxing. The *rfax* script is meant to be run continuously in the background. Its syntax is

```
rfax -dPolldir [-eErrlog] [-h] [-pPolltime] [-rRetrytime]
```

Only the *-d* switch is required. *Rfax* will poll this directory looking for files with which end ‘job,’ e.g. *faxthis.job*. *This file is presumed to be a batch or command type file. The format is*

```
# This is a comment  
command 1
```

---

```
command 2 \  
    command 2 continued  
...  
eof
```

The last line in the command file must be “eof” (case insensitive). This is to prevent premature use of the command file. Failure of any command is presumed on a nonzero exit code, and stop the execution of the command file. In this case the command file will be renamed to “<anything>job.dead.” On the other hand, if all commands in the file finish successfully, the “job” file will be deleted. Example (Windows NT):

```
# This is my first 'job' file  
enfax -2 myfile.txt;0 myfax.fax  
sendfax -s faxserver myfax.fax 4149259278  
del /q myfile.txt;0 myfax.fax  
eof
```

Example (Unix):

```
# This is my first 'job' file  
  
enfax -2 myfile.txt myfax.fax  
sendfax -s faxserver myfax.fax 4149259278  
rm myfile.txt myfax.fax  
eof
```

## faxpoll (unix only)

---

**Note:** Unless you need to have routing information automatically extracted from the document you wish to fax, you should use the *rfax* utility, which is much simpler to set up than *faxpoll*.

The *faxpoll* utility provides remote client faxing capability. It allows documents to be dropped into a monitored directory from a mainframe or PC, then automatically acquired and spooled for faxing. The *faxpoll* script is meant to be run continuously in the background.

The command syntax is as follows:

```
% faxpoll [-p polldir] [-t pausetime]
```

At given intervals specified by *pausetime*, *faxpoll* checks a directory named *polldir* for new files to be faxed. The files can either be in plain text or PostScript format. *faxpoll* extracts routing and cover sheet information from the files, encodes the files into faxes using *enfax*, and sends them out via *sendfax*.

---

The argument *polldir* must be the full path name of the spool directory for the files you are faxing. If you don't provide this argument, *faxpoll* assumes that the *polldir* directory is named *remotefaxes* and that it resides in the current directory. If the program cannot locate the directory, it reports an error and exits.

The argument *pausetime* specifies how many seconds the program sleeps before checking to see if any new files have arrived in *polldir*. If you enter no value for *pausetime*, the default setting is 30 seconds.

To use *faxpoll*, first place the file you want to fax in *polldir*. The *faxpoll* program then creates a temporary copy of your file in a directory named */tmp/polldir*.

---

**Note:** Temporary files are deleted automatically when the faxes have been successfully transmitted. If, however, problems occur during transmission, *faxpoll* retains the temporary files and creates additional files containing error messages and return values. These files have names ending in *.log* and *.ret*, respectively.

The following table provides extraction information for *faxpoll* documents.

Use	Postscript	ASCII
<i>Recipient</i>	Faxname	N or n
<i>Subject</i>	Faxsubject	S or s
<i>Fax phone number</i>	Faxphone	P or p
<i>Coversheet filename</i>	Faxcover	C or c
<i>Return email address</i>	Faxreturn_email	E or e
<i>Text notes</i>	Faxtext	T or t

When you prepare to send a file, imbed extraction information in the file. The method of imbedding the extraction information is different for ASCII text files and PostScript files.

---

## ASCII Files

When creating the file, enclose the extraction information within the characters `{/ }`, as follows:

```
{[x string]}
```

where *x* is any of the ASCII characters given in the table above.

### **Example**

```
{[p 521-3600]}Dear {[N John Doe]},  
{[S New Products]}
```

If you use lowercase letters, *faxpoll* removes the entire bracketed section when it extracts the information. When you use uppercase extraction characters, *faxpoll* removes the brackets, but not the information within them. With this entry method, *faxpoll* can use information from within a file both for sending and for including in the fax itself.

## PostScript Files

After you create a PostScript file, place the extraction information shown previously in the table after the characters `%%`.

### **Example**

```
%%Faxphone: 521-3631  
%%Faxname: John Doe  
%%Faxsubject: New Products
```

The entire line , including the terminating newline, is removed from the file.

Although both of these methods usually work equally well, the first method may be incompatible with some PostScript generators. For example, if your generator creates code that breaks up the special strings you've embedded, *faxpoll* won't be able to extract the necessary information. In this case, the second method is your only choice. Otherwise, either method should work and you can simply choose the more convenient of the two.

---

**Note:** If a fax in the *faxpoll* directory is unable to be sent, the program renames the file, adding *.dead* to the filename (for example, *foo.dead*). To determine the cause of the problem, check the fax's *.log* file in the directory */tmp/polldir* (where *polldir* is the name of the *faxpoll* directory).

---

## splitfax

The *splitfax* utility, located in the *utils* subdirectory, extracts selected pages from an existing fax. You can use this program to separate pages in a fax, such as the cover page from the body or individual pages to be resent or reused.

The command syntax is as follows:

```
% splitfax fax_file page1 page2 . . . output_fax
```

### **Example**

```
% splitfax my_fax 2 4 5 outfax
```

creates a new fax named *outfax*, consisting of pages two, four, and five of the original fax, named *my\_fax*. The attributes of the fax (such as sender, recipient, and date) are unchanged except for the number of pages, which is correspondingly decreased.

## texttops

The Text-to-PostScript program, *texttops*, is a simple page layout program that lets you convert plain text files to multi-page PostScript page descriptions. The *texttops* program is a preprocessor for *enfax*, which produces faxes with PostScript fonts.

When formatting, *texttops* does not attempt to break or justify lines of text. Line breaks are included only where the input text contains the LF character (ASCII 10). Page breaks are automatically inserted at the bottom margin. You can specify the top, left, and bottom margins in points (72 points per inch) using command line switches. You can also rotate pages using another command line switch.

---

**Note:** If your application requires line adjustment or multiple typefaces per document, use a full-featured page layout program like *IslandDraw* instead of *texttops*.

The *texttops* command syntax is as follows:

```
% texttops [switches] ASCII_infile PostScript_outfile
```

---

The command switches are as follows:

```
[-fs font_size_points]
[-ls leading_points]
[-tm top_margin_points]
[-lm left_margin_points]
[-bm bottom_margin_points]
[-pl page_length_points]
[-ro]
[-s license_server]
[-tf typeface]
```

The *-fs* switch specifies the font size in points. The default size is 12 points.

The *-ls* switch specifies leading space—the additional space between lines of text beyond the type height itself. The default setting is 4 points.

The *-tm*, *-lm*, and *-bm* switches specify the top, left, and bottom margins in points. You cannot specify the right margin, since the line length depends on the typeface, type size, and actual text.

The *-pl* switch lets you specify the page length in points. The default setting is 11 inches  $\times$  72 points = 792 points.

The *-ro* switch displays the fax in landscape mode (rotated 90 degrees).

The *-s* switch defines the name of the host machine running the Bristol license server (*blserver*). If you omit this switch, *texttops* looks for *blserver* on the current machine.

The *-tf* switch specifies the typeface to use. The default is Palatino-Bold. Arguments must be valid PostScript typeface names (see Appendix A, *PostScript Interpreter*).

---

## brfilter and the Alchemy Filter Pack (Unix only)

The Alchemy Filter Pack contains a large number of filters for converting files from one format to another. The *brfilter* utility program lets you call the Alchemy program directly from the command line (that is, without using *enfax*). The Alchemy Filter Pack requires a separate license.

Alchemy and *brfilter* take the same arguments and produce the same output, converting one image file format to another. Please read the accompanying Alchemy manual for a full description.

The *brfilter* command syntax is as follows:

```
% brfilter [-server license_server] [Alchemy switches]
option input_file_name output_file_name
```

The *-server* switch defines the name of the host machine running the Bristol license server (*blserver*). If you omit this switch, *brfilter* looks for *blserver* on the current machine.

The *option* argument defines what kind of output file you want to create for Alchemy. Options are entered as switches.

The *-h* switch provides online help, including references to the Alchemy manual. See the *-h2* and *-h3* switches, which list the output file format options available. The *-h2* switch gives file formats A–L, while the *-h3* switch gives file formats M–Z.

## faxtosun

The *faxtosun* utility, located in the *utils* subdirectory, is available only on Sun workstations. This program converts an IsoFax fax file to Sun Raster files in the Sun *RT\_STANDARD* (uncompressed) format. One file is generated for each page in the fax. The dimensions of the Raster files vary according to the page length.

The command syntax is as follows:

```
% faxtosun [switches] infile outfile
```

---

The switches for *faxtosun* are as follows:

```
[-s license_server]
[-1 | -2]           1 = low res (default), 2 = high res
[-k scramble_key]
```

The *-s* switch defines the name of the machine running the Bristol license server (*blserver*). If you omit this switch, *faxtosun* looks for *blserver* on the current machine.

The *-1* switch (default) generates 98-dpi Raster files (roughly 850 x 1100 pixels for an 11-inch page). The *-2* switch generates 196-dpi Raster files (roughly 1700 x 2200 pixels for an 11-inch page).

The *-k* switch lets you specify a key to unscramble a scrambled fax before converting it. See Chapter 12, *FaxTerm*, for instructions on how to compose a scrambled fax.

*Infile* is the name of the fax file to be converted.

*Outfile* is a base filename for a series of Sun Raster output files, one per page. The page number is appended to the given base filename.

### **Example**

```
% faxtosun -s my_lic_server -2 myfax page
```

encodes a fax named *myfax* (three pages long) into three Raster files—*page1*, *page2* and *page3*—at 196 dpi.

---

## faxtotiff

The *faxtotiff* utility, located in the *utils* subdirectory, converts files in the IsoFax format into TIFF Class-F files. A TIFF Class-F file is produced for each page in the IsoFax file. The command syntax is as follows:

```
% faxtotiff [-i] compression_number infile outfile
```

The *-i* option writes the TIFF file in Intel byte order. By default, the TIFF file is written in Motorola byte order.

The *compression\_number* specifies whether the TIFF file is a Group 3 or Group 4 file. Use 3 to produce Group 3 files and 4 to produce Group 4 files.

The *infile* is the name of an IsoFax fax file.

The *outfile* is the destination name for your TIFF Class-F file. The sequence *.p#*, in which *#* is the page number, is appended to the file name.

### **Example**

```
% faxtotiff 3 2_page_fax test_TIFF
```

converts the file *2\_page\_fax* into two files: *test\_TIFF.p1* and *test\_TIFF.p2*, that are TIFF Class-F files in the Motorola byte order.

---

**Note:** TIFF is a flexible standard and different TIFF readers and writers can have widely varying results. This particular TIFF writer may not be compatible with the TIFF reader you are using.

---

## tifftofax

The *tifftofax* utility converts a TIFF Class-F file, a standard file format for facsimile images, to a file in the IsoFax fax format. A multi-page TIFF Class-F file produces a multi-page IsoFax file. The command syntax is as follows:

```
% tifftofax tiff_file isofax_file
```

## checkfax and deletefax (Unix only)

The *src* subdirectory of the IsoFax distribution includes the sample files *fax.c*, *use\_deletefax.c*, and *Pplatform.h*. These are self-documenting C-language programs, which delete queued faxes and return information about queued faxes, respectively. The file *checkfax.a* contains a library of additional functions required for linking. You can either write your own code based on these sample programs and their internal documentation, or you can use the compiled tools, *use\_checkfax* and *use\_deletefax*.

## faxinfo

The *faxinfo* utility, located in the *utils* subdirectory, provides information about the characteristics of a fax in the IsoFax file format. The command syntax is as follows:

```
% faxinfo [-inches] fax_filename
```

*faxinfo* returns the size of the fax file as well as the resolution and compression type of the fax. For each fax page, *faxinfo* gives the number of lines in the page, the length of the page in inches, and the size of the page in bytes.

The *-inches* switch causes *faxinfo* to return a single number: the length of the longest page in the fax, rounded to nearest inch.

### **Example**

```
% faxinfo /home/john/testfax
resolution: Fine (196 lpi)
Compression: MH (1-D)
page 1: 1054 lines (10.76 inches), 24690 bytes
page 2: 1055 lines (10.77 inches), 36620 bytes
page 3: 1079 lines (11.01 inches), 18608 bytes
```

---

## find\_license\_server and find\_fax\_server

These two utilities, located in the *utils* subdirectory, search your network for running copies of *blserver* and *faxd*, respectively. They output a list of the server names and their network IP addresses to *stdout*.

## brkill

Windows NT 3.51 does not provide the same means of control over the process stack as NT 4.0. In order to kill a process that is not managed by a running GUI application, one has to explicitly kill the IsoFax processes. The utility program *brkill* has been provided for this purpose. Its syntax is

```
brkill
-d          verbose output
-e<reg expression> Regular expression for which to
                  search
-h          print options
-k          Perform kills on process matching regular
                  expressions
-p<proc id>  kill by process id number
```

*Brkill* produces an output record for each process found (or killed), which has the following format:

```
kill <processid>, <processhandle>, <return from
terminate>, <errorcode>, <processname>
```

For example,

```
C: utils\brkill -k -efax
kill 123, 54321, 0, 0, faxinboxd
```

This looks for any process names with the string “fax” in them, and kills them.

## Toolkit Exit Codes

All Fax Toolkit programs exit with a 0 when they are successful and a 1 when any type of failure occurs. (The *sendfax* program returns more detailed error codes. See “Return Codes from *sendfax*” on page 8-21.)

All the Fax Toolkit programs that check out client licenses produce the following exit status codes:

---

3     *no license server active*

4     *no license available*

These codes are useful for writing scripts that may retry later if a license problem is encountered.

# 9

## ISO FAX ADMINISTRATION

---

Because of the wide distribution of its components, IsoFax requires organized administration. This chapter contains a variety of informational and how-to topics, including:

- Maintaining the IsoFax account
- Adding a new UNIX user
- Environment variables
- IsoFax directories
- Configuration files
- IsoFax files
- Prototype configuration files
- The *server\_info* program
- The *accounting\_log*
- The *fax\_log*
- Host name and userid on PCs
- The *blserver\_log*
- Naming of incoming faxes
- Least cost routing
- Managing multiple queues
- The FaxInbox and the MODEMS.info file

- 
- Starting the fax server at system startup
  - Administering *USER\_LIST.info*
  - The *[default]* and *[admin]* users
  - Server-side cover sheets
  - Restricted sending
  - Setting up fax routing via FaxInbox
  - Setting up fax routing via email
  - Sample *USER\_LIST.info* Records
  - Client Email Notification
  - Managing system logs
  - Shutting down the fax server

In addition to the information in this chapter, the IsoFax Administrator should be familiar with all the client tools and server software.

## The IsoFax Account (Unix only)

In order to avoid permission problems, the installation chapter encouraged you to set *umask* to zero before running the fax server for the first time. Let's see why. Suppose the fax server is installed by user a particular user whose *umask* produces restrictive permissions. Later, the fax server is killed and restarted (in the same location ) by a different user. Now the fax server may no longer have the necessary permissions to read and write such directories as *incoming* and *work*.

While the goal of initial installation was to create a wide-open system for evaluating and becoming familiar with IsoFax, you may now wish to administer the product more tightly.

To avoid permission and administration problems, you can uninstall and then reinstall IsoFax by following these steps:

1. Create an IsoFax administrative account such as *isofax*. This account's home directory should be the IsoFax installation directory.
2. Use *su* or *login* to become the administrative user and install the software.

- 
3. Start the IsoFax daemons *blserver* and *faxd* either as *root* or the IsoFax administrative account.
  4. Create an *isofax* group, the members of which can be given permissions as you see fit.

Additional information on this subject *may* be present in the file *README/README.install.notes*.

## Adding a New UNIX User

Once your IsoFax installation is operating to your satisfaction, you can begin to add users.

To add a new user:

1. Set the environment variable *ISOFAXHOME* to the full path of the directory containing the IsoFax executables.
2. Add *ISOFAXHOME* to the user's shell search path.

---

**Note:** An *[admin]* user is essential to proper administration of the IsoFax account. The *[admin]* user provides the mechanism for notification of a variety of events. In general, the initial values for the admin-specific attributes are satisfactory, but to receive notification, you must install an email address. For details about the *[admin]* user, see "The *[admin]* User" in Chapter 6, *User Configuration*.

3. If you wish the user to participate in FaxInbox create a *[user]* entry in the *USER\_LIST.info* file.
4. If you wish to override certain of the user's preferences, see "Client Preference-Override Attributes" in Chapter 6, *User Configuration*.

You may make changes in the environment and path for individual users or for all users of a system. Unless the majority of system users will not use IsoFax, we recommend you change the environment for all users. The following sections describe this procedure for typical installations.

---

**Note:** Change the search path only *after* the system path has been set.

---

## Korn and Bourne Shell Users

Type the following commands at a Korn or Bourne shell prompt (\$):

```
$ ISOFAHOME=/path/to/isofax
$ export ISOFAHOME
$ PATH=${PATH}:${ISOFAHOME}
```

To apply these commands to individual users, place the commands in the file *.profile* in the user's home directory, for all platforms.

To apply these commands system-wide, place the commands in the file */etc/profile*.

## C Shell Users

Type the following commands at a C shell prompt (%):

```
% setenv ISOFAHOME /path/to/isofax
% set path = ( ${path} ${ISOFAHOME} )
```

To apply these commands either to individuals or across the entire system, add them to the files specified in the following sections for specific platforms.

### SunOs Platform

System-Wide: There is no simple, documented way to do this. For some suggested methods, see the file *README/README.hacks* in your IsoFax distribution.

Individuals (in home directory): *.login*

### Solaris Platform

System-Wide: */etc/.login*

Individuals (in home directory): *.login*

### HP Platform

System-Wide: */etc/csh.login*

Individuals (in home directory): *.login*

---

## AIX Platform

Make the two changes shown below to the */etc/environment* file:

- Append */path/to/isofax* to the PATH definition string. For example, change

```
PATH=/usr/bin:/etc:/usr/sbin:/usr/ucb:/usr/bin/X11:/sbin
```

to:

```
PATH=/usr/bin:/etc:/usr/sbin:/usr/ucb:/usr/bin/X11:/sbin:/path/to/isofax
```

- Add this line to */etc/profile* or */etc/environment* (but not both):

```
ISOFAHOME=/path/to/isofax
```

Individuals (in home directory): *.login*

---

---

**Important:** The */etc/environment* file affects both the Bourne and Korn shells. If some of your users use *sh* or *ksh*, you should not change */etc/profile*.

---

## Adding a New NT User

Please consult the IsoFax WinClient reference manual.

## Environment Variables

IsoFax tries not to rely too heavily on environment variables, but in complicated installations with multiple fax servers and multiple license servers, variables can greatly simplify administration. The following variables are recommended for use with IsoFax.

BLSERVERHOME	The license server <i>blserver</i> uses this variable to locate the license file and generate log files.
ISOFAHOME	Client tools and the fax server use this variable to locate various executables and scripts, including the PostScript Interpreter. <b><i>Highly recommended!</i></b>
ISOFAXTMP	Use this variable to specify a directory where all IsoFax temporary files are placed as an alternative to the default <i>/tmp</i> (Unix), <i>TEMP</i> or <i>TMP</i> (NT) directory.
HOME	This variable identifies your home directory. IsoFax uses this variable for locating cover sheets and address books, unless specific full paths are set up in the IsoFax/MX General Properties window or the <i>FaxTerm</i> Settings screen.
FAXSERVER	This variable specifies the name of the machine on which the fax server ( <i>faxd</i> ) is running. This variable is required by <i>faxmail2</i> , the shell script which re-routes electronic mail messages to the fax server, and the script <i>faxpoll.script</i> . (For more information, see Chapter 13, <i>Email and IsoFax</i> .)
LICENSESERVER	This variable specifies the machine on which the license server is running. It is required by <i>faxmail2</i> and <i>faxpoll.script</i> .

---

## IsoFax Directories

IsoFax uses the following directories for specific functions, as described in this section.

<i>Archive/</i>	The fax server stores archival copies of all incoming and outgoing faxes in this directory. The location of this directory is given in the dynamic variable ARCHIVES. The default is no value—that is, do not archive faxes.
<i>faxes/</i>	The IsoFax/MX and FaxTerm clients create and/or view faxes in this directory. The location of this directory is set in the IsoFax/MX General Properties window or in the FaxTerm Settings screen. The default is <i>/faxes</i> in the user's home directory.
<i>incoming /</i>	The fax server stores incoming faxes in this directory. Its location is given in the dynamic variable INCOMING. The default is <i>./incoming</i> (that is, relative to the directory where <i>faxd</i> is running).
<i>work/</i>	The directory in which IsoFax queues outgoing faxes and administration. The location of this directory is given in the dynamic variable WORK. The default for WORK is <i>./work</i> (that is, relative to the directory where <i>faxd</i> is running).
<i>/tmp</i> (Unix only)	IsoFax uses this directory to create temporary files.
<i>TEMP, TMP</i> (NT only)	IsoFax uses these directories for temporary files
<i>contrib/</i>	This directory contains software contributed by IsoFax users for use by other users. Although this software is not supported, you may find it instructive and useful.
<i>READMEs/</i>	This directory contains the various <i>README</i>

---

files referred to throughout the manual.

<i>samples/</i>	This directory contains samples and duplicates of important files. The files with the extension <i>.sic</i> , which are exact (but read-only) duplicates of the <i>.proto</i> configuration files in the main IsoFax directory, are of particular importance.
<i>src/</i>	This directory contains source code to a few Bristol-supplied utilities and #include files.
<i>man/</i>	This directory contains files of manual pages in the familiar UNIX format.
<i>utils/</i>	This directory contains utility programs that supplement the IsoFax Toolkit programs.
<i>brooktrout/</i>	This directory contains programs and data used in installations containing Brooktrout modem cards.

## Required Configuration Files

The following is a list of files required for normal operation. Although the fax server and clients will start without these files, only limited functionality is possible.

<i>MODEMS.info</i>	This file contains modem declarations and must be present in the directory where the fax server runs. For details about declaring modems, see Chapter 5, <i>Modem Configuration</i> .
<i>USER_LIST.info</i>	This file contains user profiles that let you customize the behavior of each client. It also contains the names of users authorized to use IsoFax WinClient.
<i>conf.info</i>	This file contains all the admin structures for the fax server.

---

## IsoFax Files

IsoFax files with names consisting mostly of capital letters are usually considered user (or site) configurable (except *README* files, which follow standard convention and are in uppercase). You can edit configurable files with any text editor. All other files are either invariant (such as executables) or maintained automatically by the various IsoFax programs. This section describes the IsoFax files.

<i>.fax_settings</i>	FaxTerm creates and maintains this configuration file in each user's HOME directory. <b>Do not edit this file.</b>
<i>.mx_lists</i>	IsoFax/MX creates and maintains this configuration file in the user's home directory. This file contains a list of cover sheets, address books, and fax directories. <b>Do not edit this file.</b>
<i>.tps_settings</i>	Many IsoFax programs use this configuration file, maintained in the user's home directory. This file contains preferences for rendering text files with PostScript typefaces. <b>Do not edit this file.</b>
<i>bristol_licenses</i>	IsoFax software license and activation codes are stored in this file. This file is maintained with the program <i>license_tool</i> , described in Chapter 4, <i>IsoFax Servers</i> .
<i>C_XXXXXXXXXX</i>	These files, referred to as <i>C-files</i> , contain job-control information for outgoing faxes. For each <i>C-file</i> there is at least one <i>T-file</i> containing the fax image.
<i>COVER_SHEET</i>	This file is a generic ASCII cover sheet template containing special character sequences for such information as recipient name, company, and phone number. A duplicate of this file is <i>/samples/COVER_SHEET.sic</i> .

---

<i>COVER_SHEET.PS</i>	This file is a generic PostScript cover sheet template containing special character sequences for such information as recipient name, company, and phone number. For details, see Chapter 14, <i>Creating Custom Cover Sheets</i> . A duplicate of this file is <i>/samples/COVER_SHEET.PS.sic</i> .
<i>COVER_SHEET.sample1, .sample2</i>	These files are additional sample PostScript cover sheets provided for reference purposes. <b>Do not edit these files.</b>
<i>Fax_phones</i>	This file is the default IsoFax Address Book, which is automatically generated and maintained by IsoFax/MX and FaxTerm. You can select another file by pressing the Show Address Book button on the IsoFax/MX main window or on the FaxTerm Settings screen.
<i>Server_info</i>	This file contains dynamic status information on the activity of each fax modem. It is generated by <i>faxd</i> and resides in the <i>work</i> directory. Use the <i>view_server_info</i> script (described in “The server_info File” starting on page 9-15) to view this file.
<i>Status_ttyx</i>	Each <i>fax_deliver</i> process generates a file in the fax server <i>work</i> directory with a name starting with <i>status_tty</i> . These files contain information on the progress of send or receive sessions, and are used internally by <i>faxd</i> and <i>fax_deliver</i> . A typical file name would be <i>status_ttya</i> or <i>status_tty00</i> .
<i>T_XXXXXXXXXX</i>	Commonly called a <i>T-file</i> , this file contains a copy of the original fax submitted to the queue by <i>faxit</i> . A fax file may also have more than one associated <i>C_XXXXXXXXXX</i> job control file.

---

## Proto Configuration Files

Proto configuration files reside in the IsoFax directory. They have a *.proto* extension and are prototypes of files that, without their *.proto* extension, activate important fax server functions described below. You can edit these files; read-only copies of them are provided in the *samples* directory with the *.sic* extension.

<i>REMOTE_SERVERS.proto</i>	This optional file maps area codes to network servers. See “Least Cost Routing,” on page 9-25.
<i>SENDERS.proto</i>	This optional file maps the sender’s phone number (that is, the TSI) to text strings, which are used for creating descriptive filenames.

---

## IsoFax Log Files

This section describes the IsoFax logs used to track and monitor various fax server activities. All log files reside in the fax server *work* directory.

*fax\_log* This file provides a detailed record of fax server activities. Since events are logged as they happen, events from multiple modems are intermixed. If you wish to follow a particular queued fax through its life cycle, assign it a tracking ID. For an explanation of tracking ID's, see “*sendfax*” in Chapter 8, *Fax Toolkit*.

---

**Important:** Do not attempt to parse the *fax\_log* file; its content and format changes frequently.

*accounting\_log* Contains information about fax activity that you can use for billing purposes, in parsable format. For further details, refer to “The *accounting\_log* File” on page 9-19.

*blserver\_log* License server activity—including license check-outs, check-ins, denials, and time-outs—is logged in this file. The format of this file is described on page 9-22.

*dis\_database* A database containing the fax capabilities of previously called numbers.

*exception\_log* Contains exceptions from the fax server. Copies of logged messages are optionally sent to the *[admin]* user via email.

*history\_log* Once fax jobs are completed, their server records are moved into the *history\_log*, which is a binary file that contains everything known about the fax job. **Do not edit this file.**

---

<i>history_log_archive</i>	Contains the overflow from the <i>history_log</i> . You are free to delete this binary file.
<i>inboxd_log</i>	Contains log information from <i>faxinboxd</i> .
<i>modem_log</i>	Contains information about modem usage and statistics. If you want to write utilities to analyze this data, you can find the file format in <i>/src/mlog.h</i> .
<i>isoserv.log</i> (NT only)	Contains status for the <i>isoserver</i> server process, and all its child processes.
<i>queue_log</i>	A temporary file created by <i>faxd</i> and used by <i>faxinfod</i> .

## The server\_info File

The *server\_info* file contains information about the dynamic status of activity for each fax modem. Since this file is updated frequently, you should use the *view\_server\_info* utility program provided with IsoFax to display the contents of this file.

The following example shows how to execute *view\_server\_info* and interpret the results.

```
% cd /full/path/to/executables
% view_server_info
```

or for Windows NT:

```
C:\> cd\IsoFaxServer
C:\ISOFAXSERVER>view_server_info
```

Note that *view\_server\_info* assumes that the *work* directory is a subdirectory of the IsoFax server directory.

This command displays the current contents of the *server\_info* file. Each pair of lines in the file pertains to an individual modem. A typical output might contain information shown below:

---

Line	Model	Usage	Status
----	-----	-----	-----
com1	ZyXEL	SEND/REC	SENDING pid=7158 C_667629572_0
com2	ZyXEL	SEND_ONLY	OK, IDLE
com3	Rockwell	REC_ONLY	RECEIVING, pid=7181 ii_36543652

Each entry contains five columns:

- The first column is the name of the serial port or board modem channel. For example, *tya*, *tyb*, and *brooktrout0*.
- The second column identifies the modem type. For example, *ZyXEL*.

If the modem type is *Unknown*, there is either a problem communicating with the modem or the modem is not supported by IsoFax. See Chapter 2, *Installation*, for recommended modems. For a list of other modems that are known to work with IsoFax, please refer to the file *README.modems* or to the IsoFax release notes (if provided).

- The third column shows how the modem is declared in the *MODEMS.info* file:

*SEND/REC*  
*SEND\_ONLY*  
*REC\_ONLY*  
*UNUSED*  
*ERROR*  
*VOICE*  
*VOICE-SEND*

For an explanation of the *MODEMS.info* file, see Chapter 5, *Modem Configuration*.

- The fourth column shows the current modem state:

---

*OK, IDLE*  
*MODEM IS SENDING*  
*MODEM IS RECEIVING*  
*MODEM IS DOING VOICE SESSION*  
*DOWN: MODEM NO RESPONSE*  
*DOWN: MODEM CONFIGURATION ERROR*  
*DOWN: UNSUPPORTED MODEM*  
*DOWN: MODEM IS NOT CLASS-2 MODEM*  
*DOWN: TTY IS HUNG*  
*DOWN: TTY IS BUSY*  
*DOWN: NO PERMISSION TO ACCESS TTY*  
*DOWN: NO SUCH DEVICE*  
*DOWN: NO LICENSE*  
*DOWN: DEVICE ALREADY IN USE: MUST WAIT*  
*DOWN: COULDN'T CREATE LOCK FILE; CHECK PERMS*  
*DOWN: TTY UNUSEABLE*

---

The first four responses are self-explanatory. Solutions to the *DOWN* responses are described below:

- *DOWN: MODEM NO RESPONSE* indicates a failure to communicate with the modem. Check the modem and modem cable to make sure the modem is attached to the proper serial port and test the modem to ensure that no other process has access to that port (for example, *tip*). For details, see Chapter 2, *Installation*.
- *DOWN: CONFIGURATION ERROR* indicates that a modem is present, but responded in an unexpected fashion to attempts to configure it. This usually indicates that the modem is an unsupported type.
- *DOWN: UNSUPPORTED MODEM* means that IsoFax does not recognize the modem manufacturer. Refer to “Using Unsupported Modems” in the *Modem Configuration* chapter.
- *DOWN: NOT A CLASS-2 MODEM* usually means that the modem is an EIA Class-1 modem and does not have the technical capabilities required by IsoFax.
- *DOWN: TTY HUNG*, *DOWN: TTY BUSY*, *DOWN: NO PERMISSION* and *DOWN: NO SUCH DEVICE* indicate a failure to reach the modem serial device. Please check with your system administrator when you encounter one of these responses.
- *DOWN: NO LICENSE* indicates that there are not enough licenses to cover all the modems declared in the *MODEMS.info* file.
- *DOWN: DEVICE ALREADY IN USE: MUST WAIT* indicates that the serial port is being used by another process. IsoFax must wait until it is available.
- *DOWN: COULDN'T CREATE LOCK FILE: CHECK PERMISSIONS* indicates that you cannot create a lock file to secure a serial port as needed for IsoFax modem-sharing. To resolve this problem, make certain that *faxd* has write permission to the *locks* directory.

- *DOWN: UNUSEABLE TTY* indicates an internal failure

This column also shows the process ID of the *fax\_deliver* active on that port, which is *0* if the modem is idle. The process ID identifies incoming and outgoing sessions in the *fax\_log* (server log) file. You may also use the process ID to manually kill *fax\_deliver*.

If the modem is not idle, the second line contains a file name.

- 
- If the modem is receiving, the name is the incoming fax file is in the fifth column.
  - If the modem is transmitting, the name is the job-control file in the fax queue is in the fifth column.

## The accounting\_log File

Located in the *work* directory, the *accounting\_log* file let you bill users for their outgoing fax calls. The fax server adds a one-line entry to this file each time an outgoing fax is successfully transmitted, as shown in the following sample lines:

```
9-Dec-93 08:54:10 85 oreo (Unknown) 4223940 1 68
Info_4U Joe_Shmoie "4223940" (None) (None)
```

```
9-Dec-93 10:50:45 70 gummi fred 9291293 1 58
Your_Answers Jill_Losek (None) 3290 S4W8
```

Each field in the entry is separated by a single space. Note that in fields that contain more than one word (such as the fax subject field) spaces are replaced with an underscore (`_`), to facilitate parsing the log file.

Each entry includes the following information:

- The date the fax went out, in day-month-year format.
- The time the fax went out, in hour-minute-second format.
- The user ID (*uid*) of the individual who sent the fax.
- The hostname of the machine from which the fax was sent. This field, together with the *uid* field, uniquely identifies the sender.
- The user's email address as it appears in the user's General Settings. If no email address has been assigned, this field contains (*Unknown*). Maximum length is 99 characters.
- The phone number dialed. Maximum length is 99 characters.
- The number of pages in the fax.
- The number of seconds connected, which should roughly agree with the call duration on your phone bill.
- The subject of the fax, as written by the user. Maximum length is 99 characters.
- The name of the fax recipient. Maximum length is 99 characters.

- 
- The remote fax machine's ID, also known as the CSI (Called Subscriber ID). When IsoFax calls another fax machine, the remote fax sends a CSI. Note that not all recipient fax machines transmit a CSI. If none is available, this field contains *(None)*. Maximum length is 20 characters.
  - The billing code, which is a number of your choice, attached to a fax for accounting purposes. If this item is not set, the field contains *(None)*. Maximum length is 51 characters.
  - The tracking ID, which is an arbitrary number, attached to the fax for purposes of following the fax through the system. If this item is not set, the field contains *(None)*. Maximum length is 51 characters.

A perl script *analyze\_alog.pl* is included in the IsoFax distribution. You can use it as is, or modify it for your particular requirements. Or look at the following C program fragment which also parses the accounting log. For clarity, the buffer sizes are arbitrarily large and field-width precision specifiers are not used.

```
FILE *acc_log; /* open this in your main() routine */

parse_acc_log()
{
    char line[800], char date[50], time[50], uid[50];
    char date[50], time[50], uid[50], phone_num[100];
    char pages[4], connect_time[10], subject_line[50];
    char recipient[100], csi[35], bill_code[100],
    track_id[100];
    int retval;

    while(fgets(line, sizeof(line), acc_log) != NULL)
    {
        if (sscanf(line,
            "%s %s %s",
            date, time, uid, hostname, email,
            phone_num, pages, connect_time,
            subject_line, recipient, csi, bill_code,
            track_id) != 13)
            printf("The accounting log file has < 13 fields!\n");
    }
}
```

---

Figure 9-1: Sample C Program for Parsing Accounting Log File

---

## The fax\_log

Whereas the *accounting\_log* contains a parsable summary of fax activity for *individual* faxes, the *fax\_log* depicts *all* fax activity on the server. For example, while the *accounting\_log* shows a single record about the final outcome of a fax, the *fax\_log* shows all attempts to send the fax, and the reasons for any failed attempts. Because the *fax\_log* interleaves the activity of all modems as it occurs, the fax phone number is often the only way to follow a fax from its first retry to its last.

The *fax\_log* is intended for informal viewing, and its format changes frequently to improve its depiction of server fax activity. It is explicitly not parsable.

## PC Hostname and Userid

When a fax is “job” is created by a Unix client, both the userid the host name of the client are included. These identifiers eventually find their way into the *accounting\_log* and *fax\_log*. Unfortunately, PCs have no concept of userid or, in some cases, hostname. The IsoFax PC client is therefore responsible for fabricating these identifiers.

The PC’s userid field is obtained by performing a numeric transformation on the “User Name” field in the Settings/Network dialog. The PC obtains its hostname field from the TCP/IP programming interface, if present; otherwise, by converting the “User Name” field in the Settings/Network dialog to lower case and removing all spaces and punctuation.

Considering the transitory and volatile nature of these identifiers, the system administrator may actually find it simpler to **assign** a userid and hostname to each PC user by using the *hostname\_override* and *userid\_override* attributes in the user’s *USER\_LIST.info* record.

---

## The blserver\_log File

The license server log file or *blserver\_log* provides a record of license events. For example, it shows which users have checked licenses out and in, had licenses denied to them, or had licenses time out.

Each entry in the license log file is a single line containing eight fixed-width fields separated by a space. A typical entry might contain information shown below:

```
17-Sep-94 09:08:34 faxclient CHECKED_OUT_TO jsmith  
ON sparsity (001/003)
```

Each entry includes the information described below. The field width, expressed in characters, is shown in parentheses ().

- Date (9) is the date of the event in day-month-year format. The month is always the first three letters of the month, in English.
- Time (8) is the time of the event in hour-minute-second format, based on a 24-hour clock (thus, 1:00 PM would appear as 13:00:00).
- Program/feature (10), is the specific type of IsoFax license used.
- Event (15) is one of the following: *CHECKED\_IN\_BY*, *CHECKED\_OUT\_TO*, *DENIED\_TO*, *PULLED\_FROM*, or *xxxxxxxx\_OUT\_TO*, where *xxxxxxxx* is the eight-digit *hostid* for a node-locked program/feature.
- User Name (10) is the login name of the user on the client machine.
- ON (2) is a constant field, always equal to *ON*.
- The name of the client host (10).
- Program/feature status (9) indicates network license status in the form *(ooo/aaa)*, where *ooo* is the current number of network licenses checked out and *aaa* is the total number of licenses available. For example, *(008/050)* means eight licenses of 50 are checked out.

## Truncating Log Files

Do *not* edit *blserver\_log* or *fax\_log*. If either log grows too large, delete it or copy it to backup storage. IsoFax automatically creates new logs.

---

## Maintaining the License File

Occasionally you may need to modify the license file to reflect changes in your actual software license status. These changes include adding or changing client licenses and extending or eliminating your expiration date. Before you do this, you should obtain a license validation code from The Bristol Group. Call 415 925-9250 or fax 415 925-9278 for more information.

To update the license file, run the *license\_tool* program and reenter all the license information (*license\_tool* does not read the existing license file).

---

**Important:** Backup your current license file before making any changes to it.

## Modem Sharing with Multiple Applications (Unix)

IsoFax shares modems with other applications (for example, *UUCP*) by using lock files. Each device has a separate lock file, and the process that owns the lock file controls the device.

If IsoFax is configured in the *MODEMS.info* file as outgoing-only (*isofax\_o*) or as incoming-outgoing (*isofax*), the fax server creates the lock file while faxes are sent and removes the lock file between faxes. Lock files are also created when *faxd* periodically tests each modem.

If IsoFax is configured for incoming faxes (*isofax\_i* or *isofax*), the lock file is never removed. Hence, only a port declared as outgoing-only (*isofax\_o*) can share a modem with another application.

If the fax server generates messages (to standard error and to the *trace\_faxd* file) but continues to run, both incoming and outgoing faxes may fail.

## Naming of Incoming Faxes

IsoFax automatically names incoming faxes based on the *auto\_naming* dynamic variable set in the configuration file. The three general naming methods are listed below, and a way to customize fax naming is provided after the list.

- 
- If the *Auto\_naming* dynamic variable is set to *NO*, IsoFax derives names for incoming faxes from the current date and time.
  - If the *auto\_naming* dynamic variable is set to *YES* (its default), IsoFax derives names for incoming faxes from the sender's station-ID (also known as the TSI; see below for more information).
  - If the *auto\_naming* dynamic variable is set to *DOS*, IsoFax derives names for incoming files from the current date and time, but creates PC DOS-compatible file names in the 8.3 format. This setting, which allows 17,576 unique file names per day, may be necessary for successful inter-networking between the UNIX IsoFax server and The Bristol Group's IsoFax WinClient. We recommend you use this option only if your PC's TCP/IP package has problems mapping UNIX-style names to DOS style names.

If the *AUTO\_NAMING* dynamic variable in your configuration file is set to *YES*, the presence of the TSI provides a simple way to produce a filename based upon the sender's actual name, as described below.

If during fax handshaking the fax server sees a TSI, it looks in the ISOFAXHOME directory for the file *SENDERS* before creating a name for the incoming fax. The *SENDERS* file contains TSI-sender pairs linking a TSI with a specific identifier (such as a name). The server forms names based on these pairs.

For example, if you frequently receive faxes from Amalgamated Dodads whose TSI contains 4155551212 and from the law firm of Dewey Cheetham and Howe whose TSI contains 5106666666. Place the following entries in the *SENDERS* file:

```
4155551212
Amalgamated_Dodads

5106666666
Dewey_Cheetham_and_Howe
```

The fax server would then name faxes received from these parties as follows:

```
i_Amalgamated_Dodads_894b98.fax
i_Dewey_Cheetham_and_Howe_894c87.fax
```

The IsoFax distribution contains the file *SENDERS.proto*, which includes documentation and several examples.

---

## Filename Delivery Format Attribute

The options for naming faxes are applied at the server when the fax is received. Later, the fax may be routed and delivered to a client that requires a file format different from the one selected for the server as a whole. For example, suppose you have a predominately UNIX network where long file names are supported. On the network are a few Windows 3.1 clients, which must receive faxes in 8.3 file format.

When using FaxInbox or DID routing, you can use the *delivery\_file\_format* attribute to customize the file format of a delivered fax for Windows users. For more details, see “Delivery Attributes” in Chapter 6, *User Configuration*.

## Least Cost Routing

Using the least cost routing feature, you can automatically forward faxes to an IsoFax host that is geographically close to the fax recipient, thereby reducing phone charges. Specific phone numbers (or portions of phone numbers) are mapped to remote servers via the file *REMOTE\_SERVERS*.

To activate this feature, create a file named *REMOTE\_SERVERS* in the ISOFAXHOME directory, or rename the file *REMOTE\_SERVERS.proto* in the IsoFax distribution. This file also contains the rules, syntax, and examples for re-mapping phone numbers to remote servers.

Least cost routing functions as follows. Assume that it is time to transmit a fax. Immediately before attempting to transmit a fax, *faxd* searches for a file named *REMOTE\_SERVERS* in ISOFAXHOME, the EXECUTABLES directory, or the current directory. If such a file does not exist, the behavior of *faxd* is unchanged.

---

However, if *REMOTE\_SERVERS* does exist, *faxd* searches it for the phone number (or prefix) of the fax it is about to send. If *faxd* finds the phone number, it queues the fax on the server given in *REMOTE\_SERVERS*. If the phone number is not mapped to a remote server in *REMOTE\_SERVERS*, *faxd* queues the fax as usual in the local fax queue. If the phone number corresponding to a remote fax server is chosen, *faxd* attempts to forward the fax to that remote server. Queuing faxes on remote servers is problematical if the network connection is slow, prone to time-outs, or otherwise unreliable. The *REMOTE\_SERVER\_RETRY* dynamic variable determines whether to retry when an attempt to queue on a remote server fails. The default value *YES*; if the remote fax server does not respond to the forwarding request, the fax is scheduled for one hour later and its retry count is reduced by one.

The *REMOTE\_SERVER\_RETRY* dynamic variable sets the maximum number of seconds that the local fax server should spend queuing a fax on a remote server. The default value is 300.

---

**Note:** Telephone number comparison is done *before* dial substitutions are performed (for more information about phone number substitutions, see Chapter 3, *Server Configuration*).

## Monitoring Forwarded Faxes

The fax-tracking features in IsoFax/MX, IsoFax WinClient, and *faxqterm* are unaware of forwarding, so forwarded faxes never appear in the queue. If you know on which remote machine a fax was queued, you may be able to continue tracking it by monitoring the fax queue on the remote machine.

---

## Managing Multiple Fax Queues

IsoFax supports multiple outgoing fax queues, with up to 32 modems per queue. Since each queue is managed by its own fax daemon, it requires an additional *faxd* license.

To use multiple instances of *faxd*, specify the queue number using the *-q* switch:

```
faxd -q 2 [server_conf_file]
```

The value of the *-q* switch defaults to 1. In the example above, *faxd* controls the modems assigned to queue number 2. You can use an optional server configuration file for each queue.

For queue numbers 2 and above, *faxd* appends the queue number to the name of the work directory to ensure that each queue has its own information file, status file, log file, and so on. For example, the default work directory for queue number 1 is *./work*, the work directory for queue number 2 is *./work.2*, and so on.

### Example

The correspondence between a given queue number and a particular modem is specified in the *MODEMS.info* file, discussed in Chapter 3, *Server Configuration*. Although there may be a separate configuration file for each queue, all queues must share the same *MODEMS.info* and *USER\_LIST.info* files.

Suppose you wish to set up three separate transmit-only queues: one for general use, and one each for two departments in your organization, sales and engineering. Each queue will be served by two modems. To complete this setup, you must declare modems for each queue, and then start the fax daemons.

---

## Step 1: Declaring Modems for Each Queue

Assuming your system uses *ttya*, *ttyb*, *ttyc*, and so on, your modem *MODEMS.info* declarations would look like this:

```
# First queue—two modems
#
[ttya]
  usage           = isofax_o
  out_queue_num   = 1
  out_queue_num_gui = General Out

[ttyb]
  usage           = isofax_o
  out_queue_num   = 1
  out_queue_num_gui = General Out

# Second queue—two modems
#
[ttyc]
  usage           = isofax_o
  out_queue_num   = 2
  out_queue_num_gui = Sales Out

[ttyd]
  usage           = isofax_o
  out_queue_num   = 2
  out_queue_num_gui = Sales Out

# Third queue—two modems
#
[ttye]
  usage           = isofax_o
  out_queue_num   = 3
  out_queue_num_gui = Eng Out

[ttyf]
  usage           = isofax_o
  out_queue_num   = 3
  out_queue_num_gui = Eng Out
```

The *out\_queue\_num* assigns the modems to a particular queue; the GUI strings are necessary because they appear on the client software interface.

---

## Step 2: Starting the Fax Daemons

To simplify the administration of multiple outgoing queues, we recommend the following:

1. Assign queue numbers in the *Modems.info* file
2. Set the ISOFAXHOME environment variable. When *faxd* is started with a *-q* switch, it will not run unless ISOFAXHOME contains a valid path. This assures that every *faxd* started uses the same *USER\_LIST.info* and *Modems.info* files.
3. For each *faxd* started, use the *-q* switch to specify a different queue number
4. If you use configuration files, each *faxd* must be started with its own configuration file.
5. Wait for each *faxd* to load and configure completely before starting another one; if you write a script to start your *faxds*, insert *sleep* commands between invocations.

## Multiple Incoming Fax Directories

The multiple incoming directories feature lets you receive incoming faxes into a separate directory for *each* modem. No additional license is required to use this feature. The directory for each modem is also specified in the *MODEMS.info* file. If no directory is specified, the incoming files for that modem are placed in the directory *\$ISOFAXHOME/work/incoming* (Unix) or *\$ISOFAXHOME\work\incoming* (NT). For more information about the *MODEMS.info* file, see Chapter 5, *Modem Configuration*.

### Example

Suppose you wish to set up three separate receive-only queues to correspond to the three outgoing queues from the previous example. In the *MODEMS.info* example shown earlier, your modem declarations for incoming modems would look like this:

```
[ttyg]
  usage           = isofax_i
  incoming_dir   = incoming_1
  incoming_gui   = General Incoming

[ttyh]
  usage           = isofax_i
  incoming_dir   = incoming_2
  incoming_gui   = Sales Incoming
```

---

```
[ttyi]
  usage           = isofax_i
  incoming_dir    = incoming_3
  incoming_gui    = Eng Incoming
```

## The FaxInbox and the MODEMS.info File

When all outgoing faxes are queued in the same queue and all incoming faxes are stored in the same directory, the client software displays the correct information, with the initial values shown in the table below.

Attribute	Initial Value
<i>incoming_dir</i>	./incoming
<i>incoming_gui</i>	General Incoming
<i>out_queue_num</i>	1

When you start extending the configuration to multiple incoming directories and multiple outgoing queues *and* using FaxInbox, the *[user]* entries in the *USER\_LIST.info* become quite complicated. Since the values control how client software behaves, **be extremely careful to use valid numbers and exact strings from the *MODEMS.info* file.** Failure to maintain the correspondence between the GUI strings in the *MODEMS.info* file and those in *[user]* entries can lead to problems with the client software.

### Example

Continuing with the example of three incoming and three outgoing queues, this example shows how to create different user profiles in *USER\_LIST.info*.

The entry for the Designated Forwarder for these three incoming directories is shown below. Although a single user is the Designated Forwarder for three queues, they could be divided among two or three users.

```
[rheuter]
  human_name      = Rhoto Rheuter
  email_address   = msrooter@bg.com
  client_type     = win31
  forwarder       = General Incoming, Engineering
                  Incoming, Sales Incoming
```

---

---

**Important:** For typographical reasons, some values below are shown on multiple lines. In the file, they must appear on a single line. The directories given correspond **exactly** to those given in the *MODEMS.info* file.

The *[user]* entry for a client who is restricted to queuing faxes in only two queues, would look like this:

```
[wmakkid]
  human_name      = william Makkid
  email_address   = wmakkid@bg.com
  client_type     = unix-sun-solaris2.3
  fax forwarding  = true
  out_queue_num   = 1,2
```

---

**Note:** The list of queue numbers are those given in the *MODEMS.info* file.

## Starting the Fax Server at System Startup

For Windows NT, simply install IsoFax as a service using “Service Admin Tool.” For Unix platforms, the directory *\$ISOFAXHOME/samples* contains instructions on how to start the fax server at system boot time. The file *isofax.rc.local.sample* is for SunOS, IBM, and HP platforms. For Solaris, the script is *isofax.init.d.sample*.

---

## Monitoring the Fax Queue

All graphical-interface programs such as IsoFax/MX and IsoFax WinClient, contain displays for monitoring outgoing faxes in the queue, and, if desired, for modifying their characteristics. If you want to run a character-based interface on Unix hosts, however, you should use the *faxqterm* program.

The syntax for starting *faxqterm* is

```
faxqterm [-switches]
```

The switches are as follows:

<code>[-u secs]</code>	Defines the time between refresh in seconds
<code>[-s fax_and_license_server]</code>	Specifies the host of both servers
<code>[-l license_server]</code>	Defines a different host from where to get the license
<code>[-q queue_number]</code>	Designates the queue number to access

If *fax\_server* or *license\_server* do not exist, *faxqterm* assumes the local machine. The default queue number is *1*.

---

**Note:** Earlier versions of *faxqterm* required direct access to the server fax queue via NFS. The current version employs network procedures to access and modify the queue. Therefore, the *-W* flag, previously used to specify the server work directory, is now obsolete. If present, a warning is sent to standard output and the switch is ignored.

---

## Administering USER\_LIST.info

As initially configured during installation, IsoFax is an “open” system. All client software, regardless of platform, is free to send faxes. Other kinds of client behavior, such as how frequently the client makes repetitive network accesses, are governed by the internal defaults or user preferences on the client.

The *USER\_LIST.info* file is a powerful administrative tool to change client behavior. By making one or two entries in this file, you can radically change the behavior of IsoFax in the following ways:

- Establish an administrative profile for the IsoFax administrator.
- Establish a default user profile that is automatically inherited by all users.
- Override certain client preferences.
- Dictate the list of cover sheets available to the clients and where those cover sheets can be found.
- Restrict the sending of faxes to “authorized” users.

### The [default] User

The attribute-value pairs given in the *[default]* user entry are inherited by every user in the file. The prototype *USER\_LIST.info* file contained in the distribution contains an empty *[default]* record, and we strongly recommend that you retain and enhance it. Placing the *[default]* entry at the top of the file clearly documents what each user inherits. The idea is to construct a *[default]* entry that covers the majority of clients, then add exceptions on a user-by-user basis. For real-world examples, see “Sample USER\_LIST.info Records” starting on page 9-41.

Exactly what the *[default]* user contains varies according to the number and variety of clients. For purposes of self-documentation, note that some of the assigned values simply reiterate initial values.

---

In the *[default]* example given below, it is assumed that most users receive incoming faxes via the FaxInbox and that users' cover sheets are imaged on the fax server.

```
[default]
  authorize_enable      = false
  human_name           = Missing Name
  fax_forwarding       = true
  delivery_method      = faxinbox
  delivery_root        = /var/fax
  when_to_notify       = fax_failures
  how_to_notify        = email
  cover_locus         = server
  server_cover_list    = fancy.ps, reg.ps
  server_cover_list_gui = Fancy, Regular
  highest_priority     = 3
  net_poll_interval    = 60
  xmit_queue_list      = 1
  xmit_queue_list_gui  = Server OutBox
```

## The *[admin]* User

The *[admin]* user, like the *[default]* user, is critical because its attributes govern:

- When and how to notify the *[admin]* user of exceptions
- The *[admin]* email address
- The “From” field in email sent from the fax server
- The maximum number of email messages that can be sent as a result of *exception\_log* activity.

The *[admin]* user receives faxes “discarded” by the Designated Forwarder, even though the *[admin]* user does not appear in the Designated Forwarder's routing list.

Remember that the *[admin]* user can possess most of the attributes and values of ordinary users.

```
[admin]
  human_name      = Fred Bloggs
  email           = isofax@spelunker
  how_to_notify   = email
  when_to_notify  = fax_incoming, fax_exception
  admin_notify_level = notice
  server_mail_from = IsoFax Administrator
```

---

It is worth noting that in the example, the administrator would receive notification whenever a fax is received by the server. Ordinary *[user]* records, however, that possess the identical attribute would receive notification only when a fax had been delivered specifically to them.

If you wish an ordinary user receive notification whenever a fax arrives on the server, it is best to make that user the Designated Forwarder.

## Server Cover Sheets

In the IsoFax client-server model, documents are imaged on the client machine and then transferred to the fax server for transmission. In general, this approach works well because it relieves the server of the intensive load of imaging and fax-encoding. There are other benefits as well; for example, the client can preview a document before sending because the fully imaged document is on the client machine.

At times the imaging and encoding burden can become so high for the client that it essentially ties up the machine. This is seen most often when sending large distribution lists from low-powered PCs running Windows 3.1. Although the document must be prepared only once for the entire distribution list, a cover sheet must be prepared for *each* recipient. The time required to image the cover sheets and transmit them to the server is directly proportional to the size of the distribution list. In the case of large lists, it is obviously desirable to off-load the imaging and encoding burden to the server.

Most companies insist that all their business faxes bear a company-approved cover sheet. Because cover sheets are imaged on the client, it is impossible to guarantee that *any* cover sheet is being used, much less whether it is the correct one. System administrators require a flexible way to assign suitable cover sheets to users without administering each individual's machine.

In the examples described above, server-side cover sheets are desirable; in the one case to increase performance and in the other to enforce company policy.

---

Cover sheets are managed by the three client-preference override attributes *cover\_locus*, *server\_cover\_list*, and *server\_cover\_list\_gui*.

1. The *cover\_locus* attribute tells the client software which cover sheets are available.

- To restrict clients to cover sheets that exist only on the server, add the following entry:

```
cover_locus = server
```

- Alternatively, to limit users to cover sheets on their own machines, make the following entry:

```
cover_locus = client
```

- The initial value for the *cover\_locus* attribute lets the user decide which kind of cover sheet to use based on, for example, the size of the distribution list or the impact local imaging has on his machine's performance:

```
cover_locus = client,server
```

2. The *server\_cover\_list* attribute contains a comma-separated list of full paths to cover sheet files available on the server. While the internal format of client cover sheets varies from platform to platform, server cover sheets must be PostScript files. For instructions on creating PostScript cover sheets, see Chapter 14, *Creating Custom Cover Sheets*.

```
server_cover_list = sales.ps, eng.ps
```

3. The *server\_cover\_list\_gui* attribute contains a comma-separated list of descriptions for each of the server cover sheets given in the *server\_cover\_list* attribute.

```
server_cover_list_gui = Sales,Engineering
```

Cover sheet attributes placed in the *[default]* record are inherited by all users in *USER\_LIST.info*. Adding custom cover sheet attributes for individual users overrides the *[default]* attributes.

## Restricted Sending

By default, IsoFax is an open system. Any licensed user is free to send faxes without having to log in, register, or otherwise get an "account." Under some conditions, however, it is necessary to forego open access and explicitly authorize users. This is accomplished through the *authorize\_enable* and *authorize\_criteria* attributes in the *USER\_LIST.info* file. (See "Authorization Attributes" in Chapter 6, *User Configuration*.)

---

In the *[default]* entry shown earlier, the *authorize\_enable* attribute is set to *false* for purposes of self-documentation: all users unconditionally are free to send faxes as long as they are able to obtain a license to do so.

However, changing the line to

```
authorize_enable = true
```

has a profound impact on the operation of IsoFax: every user attempting to send a fax must now, *by definition*, possess a valid entry in the *USER\_LIST.info* file.

---

**Note:** In IsoFax revisions earlier than 8.0, the feature of restricted sending was implemented via a file named *AUTH\_LIST*, a list of users authorized to send faxes. Adding *authorize\_enable = true* to the *[default]* record folds the function of *AUTH\_LIST* into *USER\_LIST.info*.

To increase security, other criteria may be added. For example, adding the following line to the *[default]* record:

```
authorize_criteria = userid, hostname
```

qualifies each user by both *userid* and *hostname*. As always, the authorization criteria for an individual may be changed by adding the attributes to that person's *[user]* record.

When an unauthorized user attempts to queue faxes, the event is logged in the *exception\_log* with a severity level of *notice*.

## Overriding Client Settings

Several client programs such as IsoFax/MX and IsoFax WinClient allow a user to choose settings that might not be permitted in a tightly administered system. By editing the following attributes in the *USER\_LIST.info* file, the system administrator can control certain client behaviors:

- *alternative\_faxservers*: alternative fax servers that can be used in the event that the primary server becomes unavailable.
- *billing\_code*: an assigned billing code for the client that appears in both the *fax\_log* and the *accounting\_log*.

- 
- *cover\_locus*: the location, client or server, where cover sheets are imaged.
  - *highest\_priority*: the highest priority at which a client is allowed to schedule faxes. (Lower numbers represent higher priorities.)
  - *hostname\_override* (PCs only): PC clients typically don't have hostnames, which makes their activity difficult to track in the various logs. This attribute lets the administrator assign a hostname to the PC client.
  - *net\_poll\_interval*: the number of seconds between repetitive network requests (such as tracking outgoing faxes in the server queue).
  - *server\_cover\_list*: a list of PostScript cover sheets available to the client on the server .
  - *userid\_override* (PCs only): PC clients typically don't have userids, which makes their activity difficult to track in the various logs. This attribute lets the administrator assign a userid to the PC client.
  - *xmit\_queue\_list*: a list of the queue numbers in which clients are allowed to queue faxes.

In general, the client maintains its own internal values for these attributes, either as program defaults or as user-selectable preferences. These values are overridden by the corresponding attributes in the client's *USER\_LIST.info* entry. The exact meanings of these attributes and their values are given in "Client Preference-Override Attributes" in Chapter 6, *User Configuration*.

## Setting up Routing via FaxInbox

This section provides step-by-step instructions for setting up fax routing and delivery via the FaxInbox feature. The user record *[rheuter]* in the *Sample USER\_LIST.info Records* section, starting on page 9-41, illustrates this setup.

1. Select any user, except the *[admin]* user, from the *USER\_LIST.info* file to be the Designated Forwarder, and add the following lines to this user's record:

```
forwarder      = General Incoming
delivery_method = faxinbox
```

---

“General Incoming” is the default nickname given to all incoming directories in the *MODEMS.info* file.

When the Designated Forwarder runs *IsoFax/MX* or *FaxManager* (in IsoFax WinClient), the Route Fax menu option is active.

When this option is selected, two lists are shown:

- On the left: all the faxes in the General Incoming directory
- On the right: all the users whose records have the following line:

```
fax_forwarding = true
```

2. To see whom a fax is addressed to, double-click an incoming fax to bring up the fax viewer.
3. Highlight the recipient’s name in the box on the right-hand side.
4. Select *Deliver* or *Discard*. (Discarded faxes are kept in the *[admin]* faxinbox directory.)
5. Both IsoFax/MX and FaxManager have visual indicators that inform recipient that a fax has been received. Users who wish to be notified by email that a fax has been delivered to their inbox should add the following line to their record:

```
when_to_notify list = fax_incoming
```

When the users receive the notification email, the subject line contains the following: “faxinbox: Fax delivered to you.”

6. To view delivered faxes:
  - The IsoFax/MX user presses the Fax Browser button.
  - The FaxManager recipient clicks the *Local Inbox* tab.

---

## Setting up Routing via MIME Mail

This section provides step-by-step instructions for setting up fax routing and delivery via the FaxInbox subsystem. The user record *[bertha dablues]* in the *Sample USER\_LIST.info Records* section, starting on page 9-41, illustrates this setup.

1. For Windows NT only, first set *SMTP\_host* in the *[admin]* record.
2. Select any user, except the *[admin]* user, from the *USER\_LIST.info* file to be the Designated Forwarder, and add the following lines to this user's record:

```
forwarder      = General Incoming
delivery_method = mimemail_attach,
```

“General Incoming” is the default nickname given to all incoming directories in the *MODEMS.info* file.

This causes all incoming faxes to be automatically emailed to the Designated Forwarder as MIME attachments, in the Bristol fax file format.

3. To view MIME faxes, you must make the appropriate association in your MIME-compliant email reader. The MIME tag for IsoFax is: *content-type application/x-IsoFax*; the applications for viewing faxes are *viewfax* for Unix and *FaxReader* for Windows.
4. If your MIME-compliant email reader supports TIFF-F, you can send the faxes as MIME-encoded multi-page TIFF email attachments. Make the following entry for each user who wants to use this format:

```
delivery_format = tiff_f
```

---

**Note:** To view IsoFax files successfully, you must teach your mail reader and other applications to associate IsoFax files with the appropriate IsoFax viewer. This association, which varies among platforms is often referred to as *binding*. Instructions for various platforms is contained in the */contrib/viewer\_bindings* directory.

---

## Sample USER\_LIST.info Records

This section provides real-world samples for *USER\_LIST.info* records.

### The Designated Forwarder Using Faxinbox

The Designated Forwarder can be any user. In the example below, the job of forwarding faxes is given to a Windows user who is included on the Designated Forwarder list. As with all PCs, this user is assigned a hostname and a userid. Delivered faxes are converted to the DOS 8.3 format.

```
[rheuter]
  human_name      = Rhoda Rheuter
  email_address   = rrheuter@bg.com
  client_type     = win31
  forwarder       = General Incoming
  delivery_method = faxinbox
  fax_forwarding  = true
  userid          = 126
  hostname        = sparrow
  delivery_naming = 8.3
```

Since the forwarder's *delivery\_method* is *faxinbox*, Rhoda will be able to run the routing/forwarding interface in IsoFax/MX and IsoFax WinClient.

### The Designated Forwarder Using Email

Instead of using the FaxInbox mechanism to forward and deliver faxes, the Designated Forwarder can elect to receive every incoming fax as an email attachment.

```
[bertha dablues]
  human_name      = Bertha D. Blews
  forwarder       = General Incoming
  email_address   = bertha@bg.com
  client_type     = Sun-Solaris
  delivery_method = mimemail_attach
  delivery_file_format = tiff_f
```

Since Bertha's *delivery\_method* is *mimemail\_attach* she receives all incoming faxes as MIME-encoded TIFF files.

---

## Sun Client: Fax Delivery By MailTool

In the following example, William is an occasional user who receives his faxes as MailTool attachments.

```
[wmakkid]                # Unix login name
  human_name              = William Makkid
  email_address           = wmakkid@bg.com
  client_type             = unix-sun-solaris2.3
  delivery_method         = sunmail
```

## Sun Client: Fax Delivery By MIME

In the following example, Rebecca is an occasional user who receives her faxes as MailTool MIME attachments.

```
[bwilnot]                # Unix login name
  human_name              = Rebecca Wilnot
  email_address           = bettyw@bg.com
  client_type             = unix-sun-solaris2.5
  fax_forwarding          = true
  delivery_method         = mimemail
```

## Windows Client: A Power User

In the following example, Fred works from a PC, but is also the IsoFax administrator. Accordingly, he has a complicated entry. The *routing\_number* attribute shows that Fred receives faxes via DID; he is also a FaxInbox recipient because *faxinbox* is the default delivery method. Since he is running Windows 3.11, his faxes must be converted to 8.3 format for delivery. As with all PCs, a *uid* and *hostname* are assigned.

```
[fredb]
  human_name              = Fred Bloggs
  email_address           = fredb@frizby
  client_type             = win311
  winclient               = true
  userid                  = 131
  hostname                = frizby
  cover_locus             = server,client
  server_cover_list       = fredcvr.ps
  server_cover_list_gui   = Fred's Cover
  delivery_naming         = 8.3
  routing_number          = 1024
  when_to_notify          = fax_incoming
  highest_priority        = 0
  net_poll_interval       = 10
```

---

## Groups of Users

A user group is an arbitrary grouping of user keywords. The value of the attribute *group\_gui* appears on the forwarding screen of the Designated Forwarder, and the faxes are delivered to the users given in the attribute *group*. See Chapter 7 for details about the Designated Forwarder.

```
[Marketing]
  group      = berthadablues, wmakkid
  group_gui  = Marketing
```

## Client Email Notification

The fax server requires an email address in order to notify the user of the success or failure of the fax transmission. A conflict can arise between the email address included with a user's fax and the *email* attribute given in the user's *USER\_LIST.info* entry. When such a conflict occurs, the server gives priority to the email address included with the fax. If an address is included with the fax, the server uses the address in *USER\_LIST.info*. In either case, the server observes the *when\_to\_notify* attribute to ascertain the conditions on which to notify the user.

## The Exception Log

The *exception\_log* is a file in the work directory that contains exceptions to normal operation. Exceptions are categorized according to their severity:

Severity	Description
<i>Fatal</i>	When a daemon exits, both normally and abnormally.
<i>Error</i>	Abnormal operating conditions that might compromise a major function of the server.
<i>Warning</i>	Abnormal operations that require attention, but are not likely to compromise a major function of the server.
<i>Notice</i>	Abnormal operations that are incidental to the functioning of the server. These are largely informational in content.

---

---

Log entries consist of a single line and contain the following information about the exception:

- Date and time
- Severity level
- Informative description of nature or cause
- Name of the program issuing the exception
- Name and revision of the function issuing the exception (not available on all platforms)

The *[admin]* user can elect to receive email notification whenever an entry is made in the *exception\_log*. This feature is illustrated in the *[admin]* user example provided earlier. The *when\_to\_notify* attribute list must contain the value *fax\_exception*; this turns on exception notification. Next set *admin\_notify\_level* attribute to the severity level of notification. For example, setting it to *error* notifies on errors and fatal exceptions.

To avoid receiving too many email notifications, *[admin]* can set the *admin\_exception\_volume* attribute to the maximum number of messages desired within any 24-hour period.

## Managing the Growth of Logs

The fax server manages three logs which have the potential of consuming large amounts of disk space. This section discusses the management of these logs.

### The Modem Statistics and Exception Logs

The fax server maintains a statistical log of modem usage in a format suitable for analysis by software. The log, which is in the file named *modem\_log* in the *work* directory, uses a pseudo binary format; that is, a binary file written out in ASCII. No tools are provided to analyze this log, but the record format of this file is given in the file *src/mlog.h*. Two helper functions are provided in the file *src/mlog.c*.

The fax server also maintains the *exception\_log*, which is a list of exceptions and errors.

---

As these logs can grow quite large, the two dynamic variables `MAX_MODEM_LOG` and `MAX_EXCEPTION_LOG` let you set their maximum sizes independently. The maximum size is given in megabytes. A value of `-1` turns off logging and a `0` value allows unlimited growth. The default value for both is 5 (megabytes).

A single dynamic variable `LOG_PERCENT_TRUNC` controls the percentage of truncation when either log reaches its maximum size. The default is 30 (percent).

## History Log Management

When an outgoing fax job is completed, either successfully or unsuccessfully, it is removed from the outgoing fax queue. All pertinent information about the fax is appended to a “recent history” log named *history\_log* in the *work* directory. Client software uses this log to look at past jobs. No tools are provided to analyze this log, but the record format of this file is given in the file *src/history.h*.

The growth of the recent history log is restrained by truncating the oldest records from the file and appending them to an archive file named *history\_log\_archive*. The *history\_log\_archive* has no size limit and can be deleted without harm. The *history\_log* is a binary file and cannot be edited.

The `MAX_HISTORY_LOG` variable controls how many *days* of fax jobs are retained in the recent history log before being moved to the history archive. A `-1` value turns off history logging and a `0` value allows unlimited growth. The default is 14 (days).

---

**Note:** Because considerable time is required to truncate very large logs, it is a good idea to keep these logs small or let them grow indefinitely.

---

## Shutting Down the Fax Server (Unix)

When it is necessary to shut down the fax server, wait for a period of inactivity to avoid interrupting incoming or outgoing faxes.

To shut down the fax server:

1. Find the process number of the fax server process, *faxd* using the following command:

```
# ps -ef | grep faxd (-aux for SunOS)
```

This command gives the following result.

```
Root 4450 869 --- ./faxd FAX_SERVER_CONF
```

2. Now use the process number and the *kill* command to stop *faxd*:

```
# kill 4450
```

After receiving the kill signal, *faxd* kills all processes it manages (such as *faxit*, *fax\_deliver*, *faxinfod* and *faxinboxd*) and then exits.

In the event that the simple *kill* command does not kill *faxd*, use the *-9* switch:

```
# kill -9 4450
```

Although this is certain to kill *faxd* itself, the processes managed by *faxd* are not killed and must be killed manually. In this case, find the process numbers of all the fax processes using the following command:

```
# ps -ef | grep fax* (-aux for SunOS)
```

This command gives the process numbers of all the processes beginning with “fax.”

3. Issue the *kill* command for each process.

---

## Shutting Down the Fax Server (NT)

When it is necessary to shut down the fax server, wait for a period of inactivity to avoid interrupting incoming or outgoing faxes.

If you started the IsoFax server from a Command Window, just hit Control-C in that window. If you started as IsoFax as an NT service, use the IsoFax Service Manager or the Services applet in the NT Control Panel. You can also use the command *net stop isoserv*.

# 10

## FAX ON DEMAND OPTION

---

The IsoFax Fax on Demand Option (FODO), available on Unix platforms only, is an open solution for automatic document distribution. It is not intended to be a turnkey solution, but it provides a set of building blocks. The reference implementation can be tested within minutes, and then gradually customized for different local requirements.

### Implementing a Fax-on-Demand Solution.

It is important to perform the steps below in the correct order so you do not waste time and so that our technical support people can help you.

1. Get familiar by installing the test configuration.
2. Develop your own script.
3. Prepare your documents and your document update procedures.
4. Customize your cover sheet.
5. Record the appropriate voice messages using *faxme*.
6. Install the startup voice script in the *MODEMS.info* file.
7. Perform live testing.
8. Release.
9. Maintain.

---

## Installing the Test Configuration

This will help you to familiarize yourself with the pieces and methodology, and make it possible to isolate problems later on.

---

---

**Important:** Do not attempt to customize your script or voice files until you have tested with the supplied files.

Make sure the fax server is running, and that your voice modems are properly declared—*isofax\_v* for voice only or *isofax\_vo* if you want to use this modem for sending faxes as well. This is all that is necessary to activate the fax-on-demand option.

The script and test voice documents are already in their proper places for testing. That is, they agree with the locations in the test script.

You should be able to dial in, follow the directions and get documents faxed back to you.

## Developing Your Script

First, run the sample script with

```
scripter -t path
```

Familiarize yourself with the development environment. Consult the scripting language specifications for details, although this is not a necessary step.

Then, customize the script as you see fit, using the *scripter* program for testing.

---

## Preparing Documents

If they're already on-line, great. Otherwise you need to scan them. In either case you will need to convert them to a faxable format. The IsoFax toolkit with optional filter pack is usually the best way.

At this point you should be thinking ahead about how you will keep these documents up to date.

To "load" the documents, simply give them a file name which is a positive integer. This number is exactly the number your requester will be punching in on their telephones. The documents should reside in the directory where the script will be looking.

## Customizing Your Cover Sheet

A sample cover sheet has been provided. It was generated in Framemaker, and might be a good starting point. You can also read Chapter 14, *Creating Custom Cover Sheets*, for more details.

## Recording Appropriate Voice Messages

Record the appropriate voice messages using:

```
faxme -r pathname
```

You might do this yourself, or use professional voice-over talent. You can play back voice files with:

```
faxme -p pathname
```

---

## Performing Live Testing

After developing the initial announcement script, edit the *MODEMS.info* file to declare one or more modems for voice usage:

```
usage = isofax_vo
```

or

```
usage = isofax_vi
```

Then add the name of the initial script to the modem record(s):

```
voice_script = /full/path/to/initial_script
```

It is assumed that you have already tested with the supplied voice files and script. This is *not* the time to simultaneously debug your fax server and customizations.

Remember, if you have problems at this time, you can use the following debugging tools:

- *faxme*, to verify that your voice files are OK
- *scripter*, to verify your script
- *IsoFax/MX* or *printfax2*, to verify that your documents are faxable, and that they are appropriately named

## Maintaining the Installation

This primarily involves faxable document maintenance. It also means monitoring the fax server to make sure everything is OK. You can maintain the installation automatically, manually, or using a combination of both.

## Advanced Usage

Exploit the activity log which contains phone numbers of who has been calling and which documents have been requested. Depending upon your particular application, you may want to automate this. The log is easily parsed by a script or C program.

# 11

## ISOFAx/MX

---

Creating and sending faxes in a Unix Motif environment is easy with IsoFax/MX. (Note: Windows users are directed to the IsoFax WinClient Graphical User Interface, which is described in its own document).

The IsoFax/MX graphical interface provides you with many useful features. You can use IsoFax/MX to:

- Create faxes quickly and easily with custom cover sheets.
- Attach text and graphic files to faxes.
- Preview faxes before sending.
- Send faxes at a later time.
- Monitor and update faxes while they are in the queue.
- Manage sent and received faxes with the Fax Browser.
- Distribute incoming faxes
- Use address books with full search and sort capabilities to manage your fax recipients.
- Build custom distribution lists from your existing address books.

This chapter provides the basics for installing and using IsoFax/MX, and contains more detailed information about using advanced IsoFax/MX features.

---

## Getting Started

Before you can send or receive faxes using IsoFax/MX, check with your system administrator to make sure it was installed and configured correctly for your workstation. If you need more information on installing IsoFax/MX, see Chapter 2, *Installation*. For specific instructions on installing the script that allows you to use IsoFax/MX to fax from an application, see “Installing *print\_to\_isofax\_mx*,” on page 11-45.

Once you have IsoFax/MX installed on your workstation, you must complete three tasks:

- Start IsoFax/MX.
- Verify that the license server and fax server are correct.
- Provide personal information for your copy of IsoFax/MX.

### Starting IsoFax/MX

Start IsoFax/MX from the command line with one of the two following commands, depending on where the IsoFax license server (*blserver*) is running.

- If *blserver* is running on your machine, type:  

```
% isofax_mx
```
- If *blserver* is running on another machine:  

```
% isofax_mx -s license_server
```

where *license\_server* is the name of the machine on which the Bristol license server (*blserver*) resides. Your system administrator can tell you whether or not you must start IsoFax/MX with the license server name.

The preferred version of the executable is *isofax\_mx*, which uses the Motif libraries on your system. On some platforms there is also *isofax\_mx.static*, which contains its own internal copies of the required Motif libraries. Use this version only if you encounter problems running *isofax\_mx*.

---

## Other Command-Line Options

<i>-att filename</i>	MX comes up with filename already in the attachment list.
<i>-s license_server</i>	<i>license_server</i> overrides the name of the license server stored in the Preferences.
<i>-f fax_server</i>	<i>fax_server</i> overrides the name of the fax server stored in the Preferences.
<i>-nobeep</i>	No beep on errors. It also suppresses the FaxInbox notification box from popping up when faxes are delivered.
<i>-psmap filename</i>	<i>filename</i> is an 8-bit character map file for use by PostScript.
<i>-ptf_path path</i>	<i>path</i> is the print-to-fax path—the directory where the print daemon places print-to-fax documents.
<i>-d</i>	In the absence of an <i>Xresource</i> file, do not use the built-in resources; use the default Motif defaults instead.

When the program starts successfully, the IsoFax/MX main window appears, as shown in Figure 11-1.

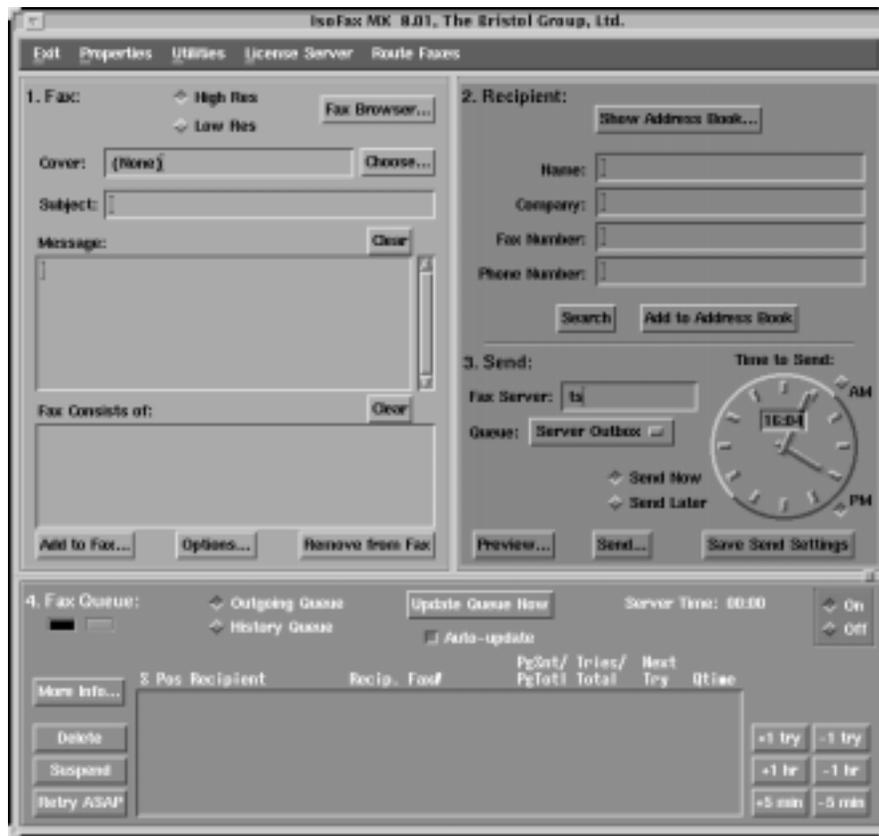


Figure 11-1: IsoFax/MX Main Window

---

## Verifying the License and Fax Servers

IsoFax/MX relies on two software servers: the license server (*blserver*) and the fax server (*faxd*). These servers may be located on your own workstation or on a remote computer on your network. For IsoFax/MX to run properly, you must verify that it has the correct names of the host machines on which these servers are located. If either name is incorrect, you must correct it before using IsoFax/MX. Once the correct server names are in place, you should not have to change them.

To verify (or change) the server names:

1. Obtain the correct server names from your system administrator.
2. Start IsoFax/MX as described in the previous section.
3. From the License Server menu in the main window, select License Server to display the current license server.
4. If the server name is correct, press Save. If the name is incorrect, type in the new name and press Save.
5. Press Dismiss to close the License Server window.
6. In the Send section of the main window, locate the Fax Server field. If the fax server name is correct, do nothing. If the name is incorrect, type in the new name.
7. Press Save Send Settings to save the fax server name for all future sessions.

You do not have to repeat this operation again, unless either server hostname changes. Also, if you initially started IsoFax/MX with the *-s* switch, you do not need to do so in the future.

---

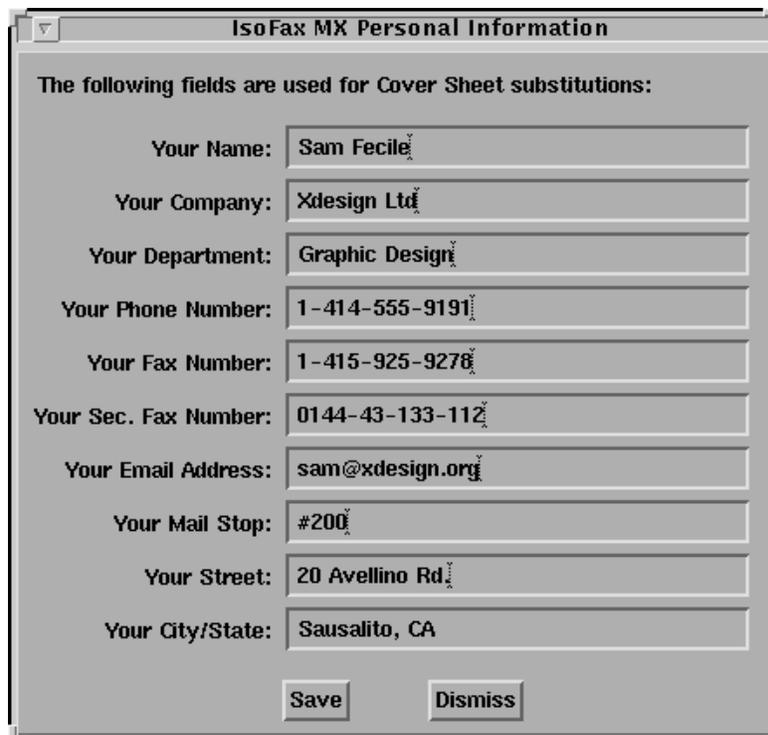
## Completing the Personal Information

IsoFax/MX requires some personal information about you and your installation (company, phone numbers, email address). Some or all of this information is used on cover sheets. We recommend you complete this information before starting to send faxes.

To enter your personal information:

1. From the Properties menu on the main window, select Personal Information. The Personal Information window appears. Figure 11- shows a completed window.
2. Enter the appropriate information in each field. If you do not know or do not have some of the information, leave the field blank.
3. When you are finished, press Save.
4. Press Dismiss to close the window.

You are now ready to send a fax using IsoFax/MX. The basic steps are described in the next section.



The following fields are used for Cover Sheet substitutions:

Your Name:	Sam Fecile
Your Company:	Xdesign Ltd
Your Department:	Graphic Design
Your Phone Number:	1-414-555-9191
Your Fax Number:	1-415-925-9270
Your Sec. Fax Number:	0144-43-133-112
Your Email Address:	sam@xdesign.org
Your Mail Stop:	#200
Your Street:	20 Avellino Rd
Your City/State:	Sausalito, CA

Save Dismiss

Figure 11-2: IsoFax/MX Personal Information Form

---

## IsoFax/MX Basics

IsoFax/MX is an easy-to-use application. Within minutes you can compose and send a fax. Although later sections of this chapter cover topics that let you fine tune your fax process, this section covers the four basic steps you use every time you send a fax with IsoFax/MX:

- Creating a Fax
- Addressing a Fax
- Previewing and Sending a Fax
- Monitoring a Sent Fax

These steps correspond to the four sections of the main window (see Figure 11-1), which are numbered in the order in which you use them. Follow the numbers on the window sections as you work through the steps.

---

## Step One: Creating a Fax

You create a fax in the Fax section of the IsoFax/MX main window. Figure 11-3 shows this section completed with sample information. When you start IsoFax/MX, the fields in this section are blank.

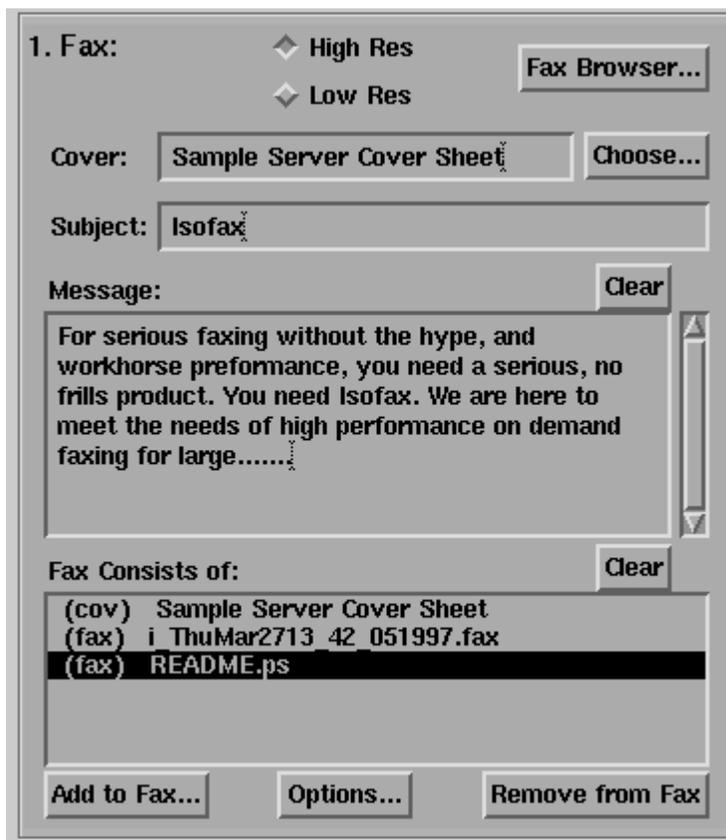


Figure 11-3: Creating a Fax

To create a fax:

1. Select High Res or Low Res at the top of the Fax area. High resolution faxes are crisper but take up twice the disk space if stored and take twice as long to send. (High resolution is the default quality for sending and viewing faxes.)
2. Press the arrow button next to the Cover Sheet field. The default list for new users contains two choices: (None) and the full path to a cover sheet, typically a path ending in `/COVER_SHEET.PS`. Select a cover sheet by clicking on it.
3. In the Subject text field, type a subject.

- 
4. In the Message area, type a short message. To clear the message, press Clear.
  5. Review the Fax Components (Attachments) field. This list shows the individual documents that make up the fax.
  6. To add another document to the fax, press Choose. A file browser window appears, which lets you move around your workstation directories and select files. To go up a directory, press Go Up One Directory. To change into a directory, double-click it. The file browser accepts wild cards.

When you find the correct file, highlight it and press Select in the file browser window. The file is added to the component list. Our sample fax has three components, the cover sheet, the message, and an attached file.

7. Use the Component Options pull-down menu to insert page breaks between components. By default, IsoFax/MX removes any white space between fax components to save transmission time and fax paper. The Component Options menu also lets you reorder fax components or overlay components.
8. To remove a component from your fax, highlight the component and press Remove. To clear all the components, press Clear.

---

## Step Two: Addressing a Fax

The simplest way to address a fax is to enter all the information directly. As you start to use IsoFax/MX, you will build your own address books and select recipients from them. Your site may also have a custom address book.

In this step we assume you have no address book but would like to start building one. For instructions on using address books, see “Working with Address Books,” on page 11-31.

Figure 11-4 shows the Recipient section of the IsoFax/MX main window with a recipient entered for our sample fax.

The screenshot displays the IsoFax/MX software interface. The top section, titled "2. Recipient:", contains a "Show Address Book..." button and four input fields: "Name:" with "John MacEvoy", "Company:" with "Nets Inc", "Fax Number:" with "412 560-4009", and "Phone Number:" which is empty. Below these fields are "Search" and "Add to Address Book" buttons. The bottom section, titled "3. Send:", includes a "Fax Server:" field with "slc", a "Queue:" dropdown menu set to "Server Outbox", and a "Time to Send:" section with a clock face showing "11:48" and "AM/PM" indicators. Below the clock are "Send Now" and "Send Later" options. At the bottom of the "3. Send:" section are "Preview...", "Send...", and "Save Send Settings" buttons.

---

Figure 11-4: Addressing a Fax

---

To address a fax:

1. In the Name field, type the recipient's name.
2. In the Company field, type the recipient's company name.
3. In the Fax Number field, type the recipient's complete fax number (your system administrator can tell you whether or not to include an area code if the fax is to a local number or a 1 if the fax is to a long distance number).
4. In the Phone Number field, type the recipient's complete phone number.
5. If desired, add the entry to the current address book by pressing Add to Address Book.

---

**Note:** You can also search an address book from this section. See "Searching the Address Book List" on page 11-34 for details.

---

## Step Three: Previewing and Sending a Fax

You can preview a fax before you send it. IsoFax/MX lets you preview (and make any necessary changes) before sending. At this point you also choose whether to send the fax immediately or at a future time. In this step, we preview and send our sample fax.

Figure 11-5 shows the Send section of the IsoFax/MX main window. Figure 11-6 shows the Fax Viewer window with the fax we created in steps 1 and 2 above.

The screenshot displays the 'Send' section of the IsoFax/MX software interface. It is divided into two main sections: '2. Recipient:' and '3. Send:'.  
**2. Recipient:** This section includes a 'Show Address Book...' button at the top. Below it are four text input fields: 'Name:' containing 'John MacEvoy', 'Company:' containing 'Nets Inc.', 'Fax Number:' containing '412 560-4009', and 'Phone Number:' which is empty. At the bottom of this section are two buttons: 'Search' and 'Add to Address Book'.  
**3. Send:** This section includes a 'Fax Server:' dropdown menu set to 'slc', and a 'Queue:' dropdown menu set to 'Server Outbox'. To the right is a 'Time to Send:' section featuring a clock face showing 11:48, with 'AM' and 'PM' indicators. Below the clock are two radio buttons: 'Send Now' (selected) and 'Send Later'. At the bottom of the 'Send' section are three buttons: 'Preview...', 'Send...', and 'Save Send Settings'.

---

Figure 11-5: Sending a fax

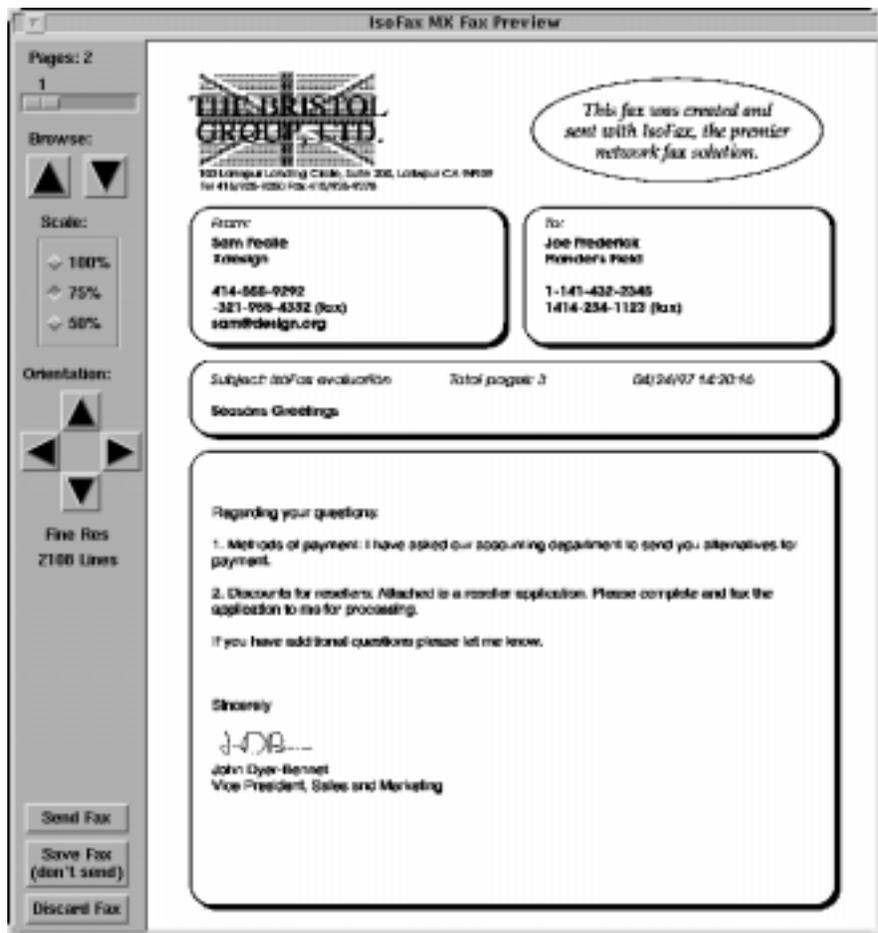


Figure 11-6: Previewing a fax

**Note:** The Fax Server and Queue Number fields in the Send section should be filled in when you run IsoFax/MX. If they are not, contact your system administrator.

To preview and send a fax:

1. In the Send section of the main window, press Preview. Within a few seconds, the Fax Viewer appears displaying the first page of the current fax (Figure 11-6). The toolbar on the left side includes tools for viewing the fax from various perspectives before sending it.
2. Use the slider bar or up/down arrows to move between pages.

- 
3. Click the scale buttons to change the display size (useful for fitting full-sized pages into a smaller window for viewing). Note that the scale buttons do not change the actual size of the fax, only the display size.
  4. Use the orientation arrows to rotate pages for viewing. For example, if you attach a horizontally oriented page, you can view it in the correct orientation before sending. Note that the orientation arrows do not change the actual orientation of the fax, only the display.
  5. When you are finished previewing the fax, you can take one of three actions, available through the three buttons at the bottom of the Fax Preview toolbar:
    - Send the fax now or later (Send Fax button)
    - Save the fax for later use through the Fax Browser (Save Fax button)
    - Discard the fax (Discard Fax button)
  6. For this example, we want to send the fax, so press Send Fax. The Send Confirmation window appears (Figure 11-7). Since we don't want to send the fax immediately, dismiss the Send Confirmation window and return to the main window and set the time (Figure 11-1).
  7. In the Send section of the main window, select Send Later.
  8. Set the time to send the fax by using the hands of the clock or the digital time field. To set time on the clock, select AM or PM, then click on the clock hands until the appropriate time appears. To set the time using the digital field, highlight the current time, type in a new time, and press Return. The clock hands display the exact time. Note that you must enter the time in 24-hour time format (for example, 1:00 p.m. is 13:00).
  9. Press Send. The Send Confirmation window, shown in Figure 1-7 appears.
  10. To change the priority of the fax, press Priority and select a new priority (1 is the highest: 9 is the lowest).
  11. If you have been given a billing code, enter it in the Billing Code field.
  12. To be notified that the fax was sent (or not sent), enter your email address in the Email Notification field.

- 
13. If you don't want to save the fax after sending, select Discard Fax After Sending.
  14. Read the message at the bottom of the Send Confirmation window to confirm that the recipient, fax number, and time to send are correct.
  15. Press Send to send the fax.



Figure 11-7: Send Confirmation Window

---

**Important:** The Queue button lists all the queues where you are authorized to queue faxes.

---

## Step Four: Monitoring a Sent Fax

The final step in sending a fax is to see the fax enter the queue and be sent. When you press Send, it takes a few seconds for the fax to appear in the Fax Queue section of the main window.

In the fax queue, you can change the time the fax is to be sent, change the number of times to retry, suspend the fax, and delete the fax. You can also change the recipient's name, phone number, subject, and priority level.

Figure 11-8 shows the Fax Queue section of the IsoFax/MX main window with the sample fax queued. The first column (S) shows the status of the fax: waiting to transmit (blank), sending (S), set to transmit later (\*), and failed all attempts to transmit (-). The fax queue list is updated according to the value (in seconds) in the Update Interval field.

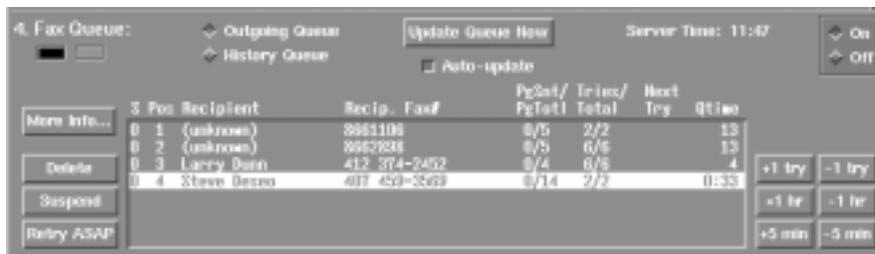


Figure 11-8: Monitoring a sent fax in the fax queue

**Note:** If the fax does not appear or you see a red light under the words Fax Queue and the message *Can't connect to Fax Server 'hostname'* in the fax queue list area, select Off, then On again (at the right side of the Fax Queue section). If the red light stays on or the fax queue list does not appear, contact your system administrator.

To monitor a sent fax:

1. Highlight your fax in the fax queue list by clicking on it. You must highlight a fax in order to make changes to it.
2. To change the maximum number of times IsoFax will attempt to send a fax, click the +1 try and -1 try buttons to the right of the fax queue list. Each click increments or decrements the total number of tries and changes the values shown in the queue list.

- 
3. Use the time buttons (below the try buttons) to change the time at which the fax will be sent. You can change the time by increments of one hour or five minutes. The sending times in the fax queue list also change.
  4. To see more information about the fax (including the sender, recipient, and current status), press More Info to the left of the fax queue. The Job Information window appears. You can make several changes in this screen, which are described in “Reviewing and Changing Job Information,” on page 11-41.
  5. To remove the fax from the queue, press Delete (below the More Info button). Note that this deletes the fax from the queue but not any private copy of it you might have.
  6. To suspend the fax (that is, to keep it in the queue, but on hold), press Suspend. The fax remains in the queue until you press Retry ASAP. At that time you can also change the fax sending time by using the time increment and decrement buttons.

When IsoFax successfully sends the fax, it disappears from the fax queue list.

---

**Important:** Once faxes have been removed from the fax queue, they are stored in the History queue. Simply click the History Queue button to review your faxing history.

The remainder of this chapter covers IsoFax/MX features that make your faxing sessions more efficient and effective.

---

## Navigating in IsoFax/MX

Before we discuss specific features, you should become familiar with general navigation and usage techniques, which you will encounter during your IsoFax/MX sessions. These techniques include:

- Using the File Browser
- Using the List Editor
- Using Motif selection methods

### Using the File Browser to Find and Select Files

The File Browser is a pop-up window that lets you easily locate files and directories on your system. We already used the file browser in step one of the preceding section to choose a fax component. As you recall, the file browser window appears when you press Choose in the components section of the main window. A file browser window also appears whenever you press any button with three dots (located next to fields that require a file or directory name).

The file browser window lists the current directory, which is the directory last selected in the file browser. You can ask the file browser to display files, directories, or both.

To change directories, press the Go Up One Directory button to ascend a level of the directory tree. To descend a level, or enter a directory, double-click on the directory name in the list.

You can also change directories by entering a full or relative path name in the field at the bottom of the window. The file browser accepts wild cards in these entries.

### Using the List Editor

The IsoFax/MX interface has three lists of commonly used files: the Cover Sheet list (on the Create portion of the main window), the Address Book list (on the Address Book window), and the Fax Browser list (on the Fax Browser window). These lists begin with very few entries. You can add entries, change entries, assign alias names to entries, or delete entries from the lists using the list editor.

---

We used the cover sheet list to create the fax in the first part of the chapter. To display any of the lists, simply press the arrow button next to the name field (for example, the cover sheet name field on the main window). A list of available files appears.

The first item on the list says Edit List. When you click on this item, the editor gives you three choices:

- Add an item to the list.
- Remove an item from the list.
- Edit an item on the list (change the item and/or assign an alias name to the item).

To perform any of these tasks, simply select the item and complete the form that the list editor displays. Save the entry and continue.

## Using Motif Selection Methods for Scrolling Lists

When you display a list of files, faxes, or address book entries in IsoFax/MX, you can often select multiple items. The Motif GUI provides some standard techniques for selecting multiple entries from a list. You can also use these techniques with IsoFax/MX, as described below:

- To select all items in the list, press Select All.
- To select a range of items, click the left mouse button on the first item and drag the highlight up or down to the last item.
- To extend an existing selection of highlighted items, hold down the Shift key and click on the first (or last) item in the range you wish to add.
- To add one or more items to an existing selection of highlighted items, hold down the Control key and click on the item or items you wish to include. The added items do not have to be contiguous to the highlighted range.

## Managing Faxes with the Fax Browser

Creating and sending faxes is only one function of IsoFax/MX. Reviewing incoming faxes and managing both sent and received faxes is the other major activity that IsoFax/MX simplifies for you. The IsoFax/MX Fax Browser lets you perform a variety of fax management tasks including sorting, viewing, printing, copying, moving, deleting, renaming, resending, routing, and inserting into a new fax.

To display the Fax Browser, press Fax Browser in the Fax section of the IsoFax/MX main window. Figure 11-9 shows the IsoFax/MX Fax Browser window.

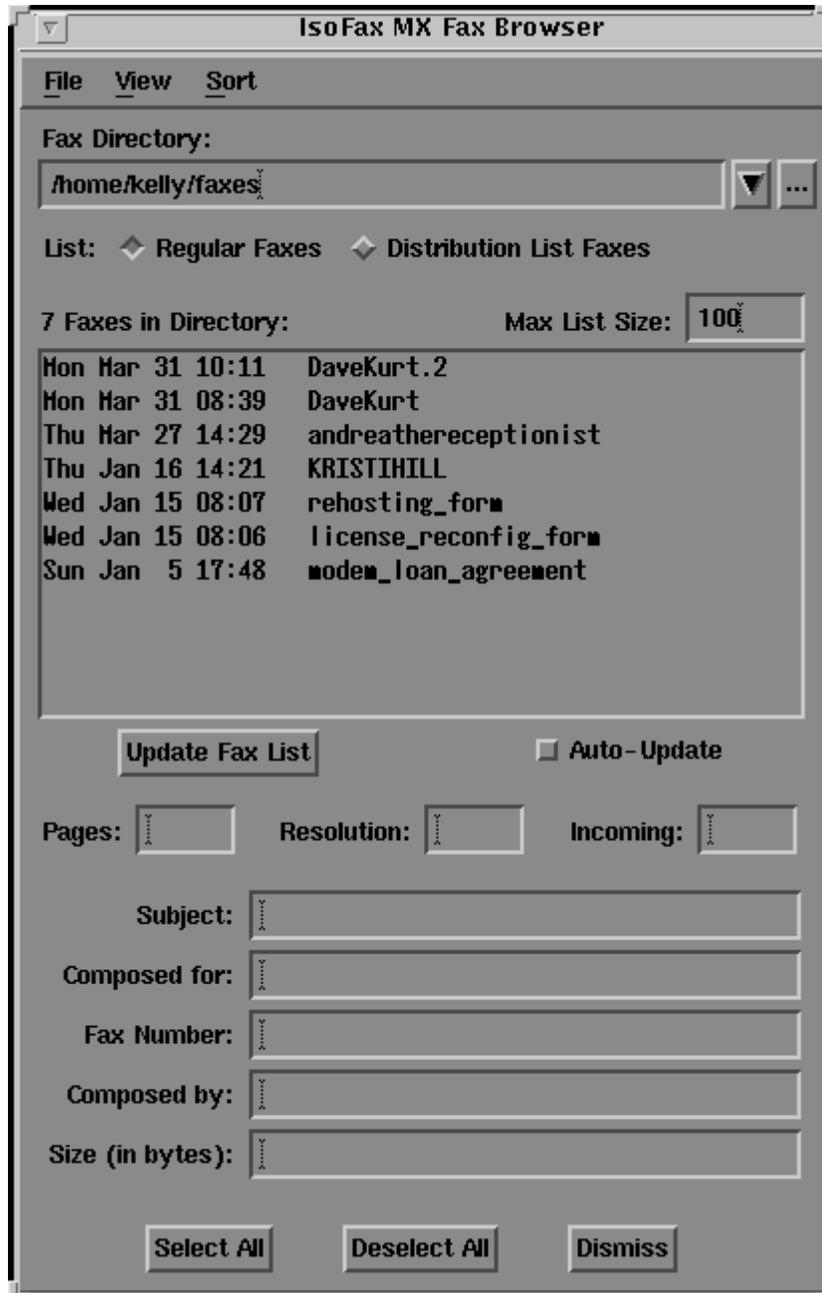


Figure 11-9: IsoFax/MX Fax Browser Window

---

## Listing Fax Directories

When you open the Fax Browser, it lists the faxes in your personal fax directory. The Fax Directory field at the top of the screen contains the full path of that directory. You can list the faxes in other directories using one of the following methods:

- Type the full path of another directory.
- Click on the browse arrow and select a fax directory from the list that appears.
- Click on the file browser dots and browse all files and directories on your system (permissions allowing).

---

**Note:** If you are receiving incoming faxes via your network, your system administrator will have determined a procedure for notifying you of received faxes and where they are located.

When you select a fax directory, a list of faxes in the directory appears in the Fax Browser scroll window. You can list either regular faxes or distribution list faxes by pressing the appropriate button above the window. Distribution list faxes are discussed in “Building and Using Distribution Lists,” on page 11-36.

To perform fax management tasks on a specific fax, highlight the fax in the list. More detailed information about the fax appears in the fields below the fax list.

## Printing Faxes

Typically you print faxes to a specified printer. However, you can also print them to a file or to a script or program for further processing. Printing and setting printer options for faxes is handled through the Fax Browser File menu.

To print a fax (or faxes) to the default printer:

1. Highlight the fax (or faxes) to be printed.
2. From the File menu in the Fax Browser window, select Print. The fax is sent to the default printer.

---

To change printer options (for example, choose a new printer):

1. From the File menu in the Fax Browser window, select Print Properties. The Print Options window appears.
2. Select a different type of printer from the Printer Definition list (for example, letter or legal). If the printer type you want is not listed, add it by filling out the appropriate fields on this window, including the Printer Name.
3. Change other properties, such as output type, paper size, scaling, centering, and compressing.
4. Press Save Settings to update the printer definition list and your new selection.
5. Press Dismiss to close the Print Options window.

### **Adding a Saved Fax to the Current Fax**

You can add an existing fax or faxes (ones you created or received) to a fax you are currently creating by using the Fax Browser.

To attach a fax:

1. In the Fax Browser, select the fax or faxes from the current directory.
2. From the File menu, select Add to Attachments. The highlighted entry appears in the Fax Components list of the IsoFax/MX main window.
3. Dismiss the Fax Browser and continue with the fax sending process in the main window.

---

## Deleting Faxes

You can delete an existing fax or faxes (ones you created or received) through the Fax Browser.

To delete a fax:

1. Select the desired fax(es) from the current directory.
2. From the File menu, select Delete. The highlighted fax is removed from the directory and the list updated.

---

**Important:** Deleted faxes cannot be undeleted.

## Renaming Faxes

You can rename an existing fax or faxes (ones you created or received) through the Fax Browser.

To rename a fax:

1. Select the desired fax from the current directory.
2. From the File menu, select Rename Fax. A dialog box appears that lets you enter a new name for the fax.
3. Type in the new name and press Save. The renamed fax appears in the directory listing.

## Copying Faxes

You can copy an existing fax or faxes (ones you created or received) through the Fax Browser.

To copy a fax:

1. Select the desired fax (or faxes) from the current directory.
2. From the File menu, select Copy Fax(es). A list of fax directories appears.
3. Select the directory to which you wish to copy the fax (or faxes).

---

## Moving Faxes

You can move an existing fax or faxes (ones you created or received) through the Fax Browser.

To move a fax:

1. Select the desired fax or faxes from the current fax directory.
2. From the File menu, select Move Fax(es). A list of fax directories appears.
3. Select the directory to which you wish to copy the fax. The moved fax no longer shows in the current directory listing.

## Resending a Fax to the Original Recipient(s)

You can resend one or more fax to the original recipient or recipients through the Fax Browser.

To resend a fax:

1. Select the desired fax or faxes from your the current fax directory.
2. From the File menu, select Send to Original Recipient(s). The highlighted fax is sent to all recipients on the original recipient list.

## Sending a Saved Fax to Selected Recipients

You can send one or more existing faxes to specific recipients through the Fax Browser.

To send a saved fax:

1. Enter the recipient's information in the IsoFax/MX main window. You can enter the information manually or select it from an Address Book.
2. Bring up the Fax Browser and select the desired faxes from the current fax directory.
3. From the File menu, select Send to Selected Recipient(s). The highlighted faxes are sent to the recipient(s) specified in the Recipient section of the IsoFax/MX main window.

---

## Distributing Incoming Faxes

For each of the fax server's incoming fax queues, the IsoFax administrator may assign a particular user to be the *Designated Forwarder*. This user's role is to browse through the incoming faxes, identify the recipient, and then forward (route and deliver) them to the recipient's FaxInbox.

If you are an IsoFax/MX user and have been assigned to be the designated forwarder for one or more incoming queues, the Fax Route Fax menu in the top level menu bar is active (otherwise that menu choice is grayed out.)

If you are the designated forwarder, selecting the Fax Routing menu brings up the Fax Routing window shown in Figure 11-10.

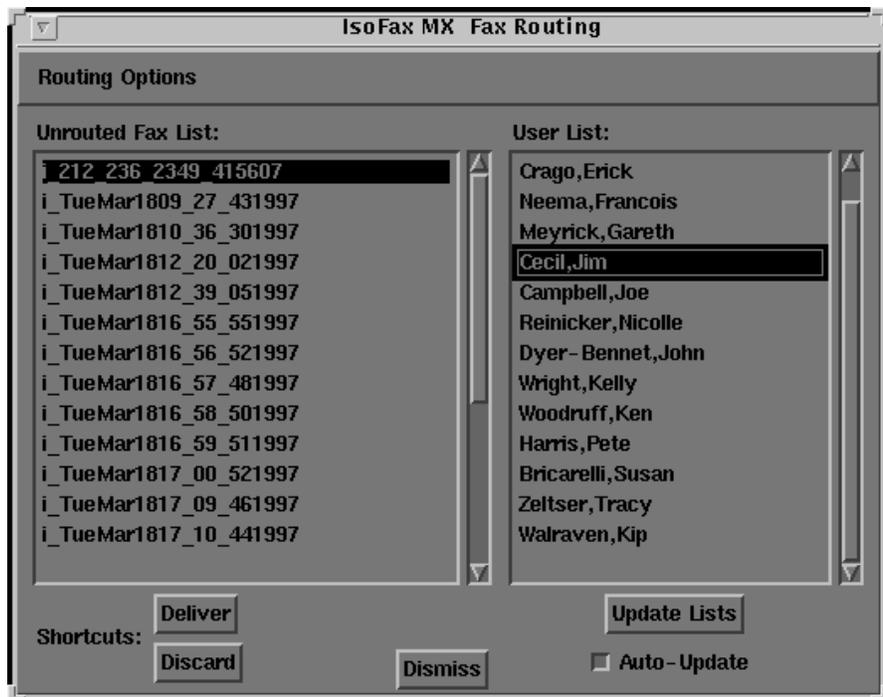


Figure 11-10: Viewing faxes in your FaxInbox.

This is a simple window, which consists of two scrolling lists. The left side of the window contains a list of incoming faxes that have not yet been routed; the right side contains a list of users that the administrator has enabled to receive routed incoming faxes.

---

The following is a typical sequence to process an incoming fax:

1. In the Fax Routing window, select a fax in the Unrouted Fax List.
2. To display the fax, select View Selected Fax from the Routing Options menu, or double-click the fax.
3. When you have identified the recipient, highlight the name on the User List on the right, then press Deliver.

You can deliver more than one fax at a time, to more than one user at a time. If the fax is addressed to one or more users in the User List, select the recipient(s) in the User List, then select Deliver Selected Faxes to Selected Users from the Routing Options menu.

4. If the recipient of the selected fax is not identifiable, select Discard from the Routing Options menu. The next fax in the list is automatically displayed.

## Monitoring Your FaxInbox

IsoFax/MX pops up a notification window when a fax is delivered to your FaxInbox. If you do not want to be notified each time a new fax is delivered, click the Suppress Future Notification button when the notification window appears. You can also see incoming faxes as they arrive by clicking the Auto-Update button in the Fax Browser window.

You view the faxes in your FaxInbox by selecting the Fax Browser window from the main IsoFax/MX window, then selecting Personal Inbox from the list of Fax Directories. A partial view of the Fax Browser window As shown in Figure 11-11.

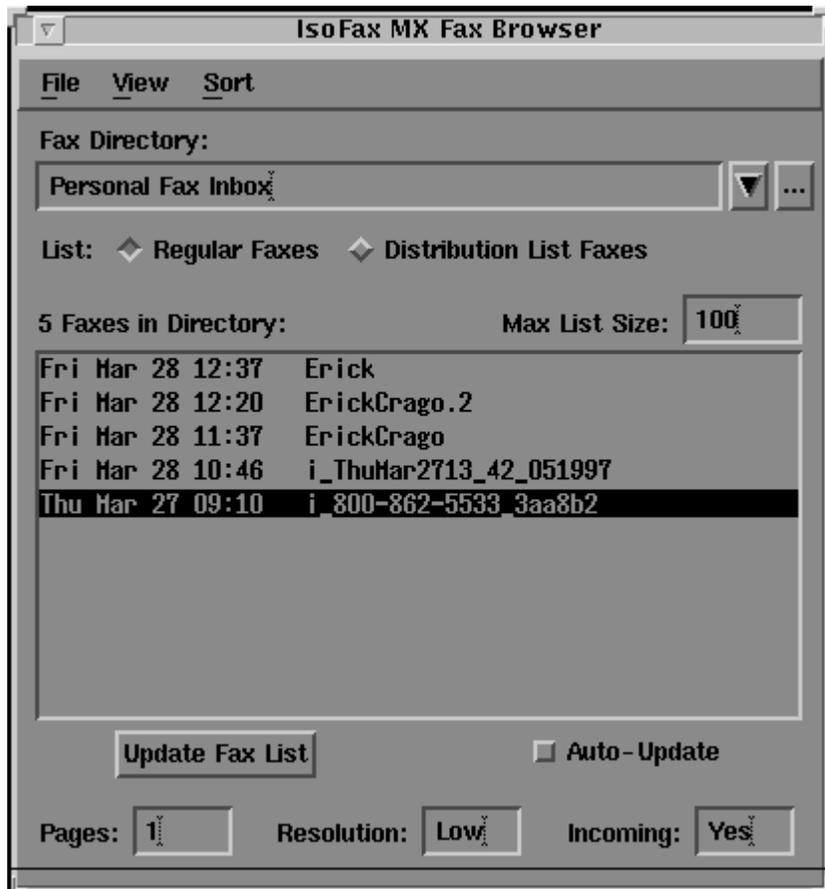


Figure 11-11: Viewing faxes in your FaxInbox.

## Viewing Saved Faxes

The Fax Browser lets you view saved faxes. Similar to the Preview function of IsoFax/MX, the View option lets you change the scale and the orientation of the fax for viewing. You can also scroll through all pages of the fax. Unlike the Preview function, the View option only shows you the fax; you cannot send or save a fax from the View window.

To view a fax from the Fax Browser:

1. Select the desired fax or faxes from your fax directories.
2. From the View menu, select a scaling option: Full Size, Scaled 75%, and Scaled 50%.

---

## Sorting Saved Faxes

The Fax Browser lets you sort faxes saved in the current fax directory. You can sort them by name or by date.

To sort a fax directory:

1. Select the desired fax directory.
2. From the Sort menu, select the type of sort. The directory is sorted in that order.

## Working with Address Books

Address books store all the information needed to address a fax to a particular recipient. You can include any recipient in an address book, whether you fax to them often or not. You can also create custom distribution lists for faxing. The IsoFax/MX address book capability includes searching, sorting, and selecting multiple recipients.

You can create your own address books or use those available on the system. For example, your site may have a default address book for all employees and frequent contacts. Using the address book makes your fax sessions more efficient and accurate.

To display the Address Book window, press Show Address Book in the Recipient section of the IsoFax/MX main window. Figure 11-12 shows the IsoFax/MX Address Book window. To close the Address Book window at any time, press Dismiss.

---

**Note:** If your site has PowerBase, you can use it instead of the Address Book. PowerBase is multi-user, more powerful, and has more features than the simpler IsoFax/MX address book. Check with your system administrator to see if you have PowerBase.

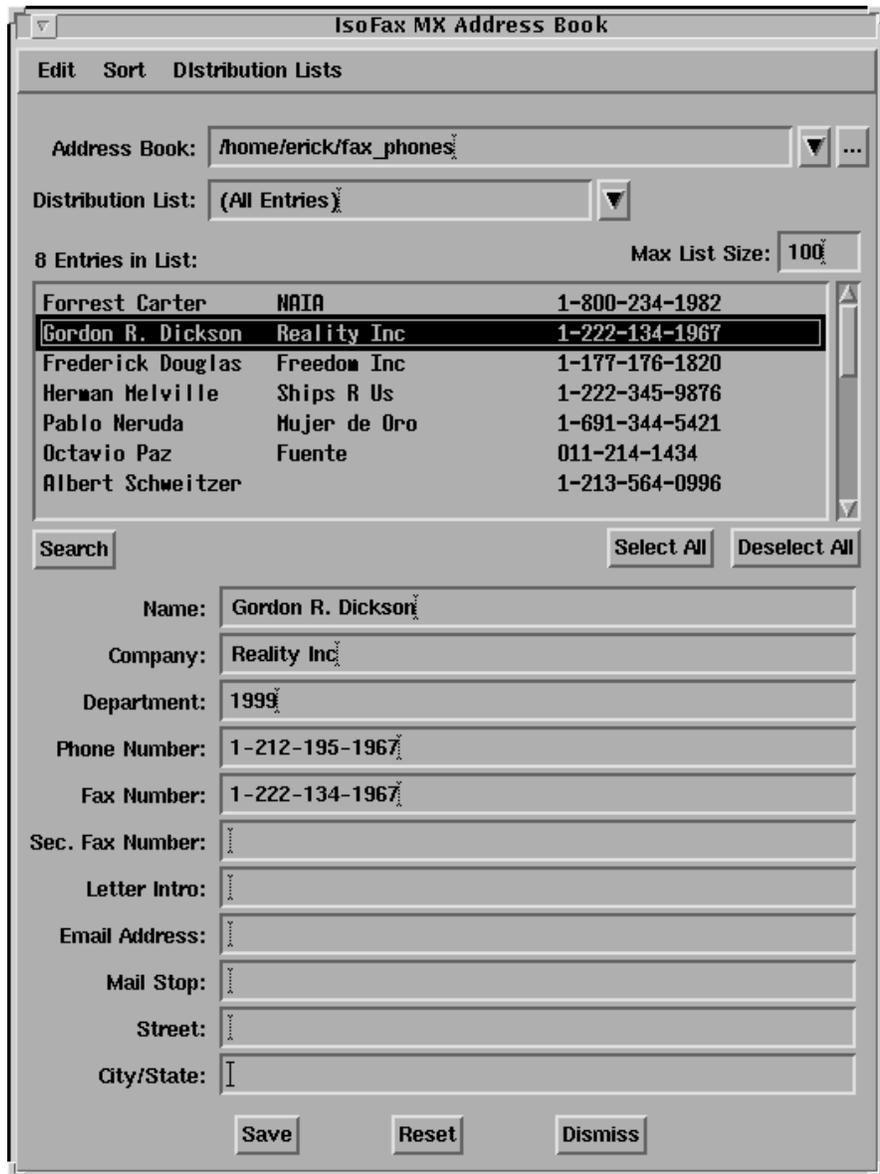


Figure 11-12: IsoFax/MX Address Book Window

---

## Selecting an Address Book

When you open the Address Book, it lists the entries in the selected address book. The Address Book field at the top of the screen contains the full path of the current address book. You can list other address books using one of the following methods:

- Type in the full path of another file.
- Click on the browse arrow and select an address book from the list shown.
- Click on the file browser dots and browse all files and directories on your system (permissions allowing).

When you select an address book, a list of the entries in the book appears. You can show either all entries in the address book or only those belonging to a specific distribution list. Distribution lists are discussed in “Building and Using Distribution Lists,” on page 11-36.

## Selecting a Recipient

The simplest way to select a recipient from an address book is to click on an entry in the current address book. The name and other information appear in the Recipient fields of the IsoFax/MX main window.

To select multiple recipients from an address book, follow the standard Motif techniques (see “Using Motif Selection Methods for Scrolling Lists,” on page 11-20). When you select multiple recipients, the Recipient area of the main window says *more than one recipient*. If you often send faxes to the same group of recipients, you should create a distribution list as described in “Building and Using Distribution Lists,” on page 11-36.

## Sorting the Address Book List

Sometimes it is easier to locate a recipient or group of recipients if you can see the entries in a different order. The Address Book lets you sort the current entries by name, company name, fax number, or phone number. To sort by one of these keys, select the appropriate item from the Sort menu on the Address Book window. The list is resorted and you can now select the recipients.

---

## Searching the Address Book List

If your address book is particularly large, or you can only remember part of a recipient's (or group of recipients) information, the search feature helps you locate the specific entry. You can use the search feature from either the Recipient section of the main window or from within the Address Book window.

To search from the Recipient section, follow the procedure described below, but make entries into the recipient fields and press Search there.

To search for one or more recipients:

1. Press Search, then place the cursor in any one of the fields below the recipient list. Type the information you remember, then press Return. All entries in the current address book matching that pattern are displayed.

For example, you want to send a fax to the Sales Manager at Delta Services but you can only remember her first name, Elizabeth. Press Search, put your cursor in the Company field, type in *Delta Services*, and press Return. All entries for people at Delta Services are displayed.

2. Narrow the search list by entering information in another field and pressing Return. The narrowed list appears.
3. Continue to narrow the search or display an entry from the list by clicking on it.
4. When you find the correct entry, select it by clicking on it. If you want multiple recipients, use the techniques described earlier for selecting multiple recipients.

## Adding and Deleting Address Book Entries

You can add one or more recipients to the current address book from the Address Book window or from the Recipient section of the main window. See "Step Two: Addressing a Fax," on page 11-10 for details about adding an entry from the main window. You can delete address book entries only from the Address Book window.

---

To add an entry, follow these steps:

1. From the Edit menu, select New.
2. In the Name field, type the full name.
3. Move the cursor to the next field and enter the appropriate information. Continue until all known fields are completed. If you need to erase the entry before saving it, press Reset to clear all the fields.
4. Press Save. The new entry is added to the current address book list.

---

**Note:** To make adding similar entries (such as several people from the same company) easy, use the Clone button to copy an existing entry and then edit the appropriate fields.

To delete one or more entries:

1. Select one or more entries to be deleted from the address book. Use any of the procedures described above to locate the entries.
2. From the Edit menu, select Delete. The selected entry or entries are removed from the address book.

## Building and Using Distribution Lists

A distribution list is a subset of a larger address book. The distribution list feature lets you create smaller lists of recipients to whom you fax frequently. You can use the distribution list to fax to *all* members of the list or to only some of them. Building and using distribution lists makes your faxing time more efficient.

---

To build a distribution list from the current address book:

1. Create a new distribution list by selecting **Create New List** from the **Distribution List** menu. A dialog box appears asking for the new name. Type the new name.

---

**Note:** A distribution list is based on the current address book and can only contain entries that are also in the address book.

2. Select entries from the address book list to be added to the distribution list. Highlight each entry to select it. Use any of the selection techniques (including searching) described in the preceding sections to locate entries.
3. Add the entries to the distribution list by selecting **Add Selected Entries to a List** from the **Distribution Lists** menu. The list of all existing distribution lists appears, including the list created in step 1.
4. Click on the new distribution list. The selected names become part of that list.

To delete entries from an existing distribution list:

1. Click the distribution list.
2. Select entries to be deleted from the distribution list. Highlight each entry to select it. Use any of the selection techniques (including searching) described in the preceding sections to locate entries.
3. Delete the entries from the distribution list by selecting **Remove Selected Entries from Current List** from the **Distribution Lists** menu. The highlighted entries are removed.

---

**Note:** Removing entries from a distribution list does not remove them from the address book.

---

To remove an entire distribution list:

1. From the Distribution Lists menu, select Delete Current List. The list of all existing distribution lists appears.
2. Click on the appropriate distribution list to be deleted. That list is removed; however, the entries that were in the distribution remain in the address book.

To use a distribution list when sending a fax:

1. In the Address Book window, select the desired distribution list. Either type the list name in the Distribution List field or use the arrow to display all available lists. The members of the distribution list appear in the list window.
2. Select all or some entries from the distribution list. To select all, press Select All. To select specific entries, use the techniques described in preceding sections. The recipient's name or the message *more than one recipient* appears in the Recipient section on the main window.
3. Complete the fax process as normal. If you are using a cover sheet with a To: field (such as any of the sample cover sheets), IsoFax/MX creates a separate cover sheet for each recipient. These multiple cover sheets and the body of the fax appear as a single entry in the Fax Browser fax list (make sure you click the Distribution List Faxes button in the top portion of the Fax Browser window).

## Changing Fax Composition Properties

Although the IsoFax/MX defaults for creating faxes may suit your needs, you can also fine-tune how IsoFax/MX composes faxes. The Compose Properties feature lets you set the page size of your fax, designate where the completed fax is to be stored, and choose from various font, margin and spacing options. You can implement these changes for the current session only or for all future sessions.

To display the Compose Properties window, pull down the Properties menu on the IsoFax/MX main window and select Compose Properties. Figure 11-13 shows the IsoFax/MX Compose Properties window. To close the Compose Properties window at any time, press Dismiss.



Figure 11-13: IsoFax/MX Compose Properties Window

## Changing the Page Length

The default page length for faxes is 11 inches. You can change this to any length by entering a new value in the Page Length field of the Compose Properties window. Note that the entry must be made in inches (decimal fractions are supported). When you have made the change, press Save if you wish to save that value as a permanent setting.

## Storing Sent Faxes

IsoFax/MX lets you store faxes after sending them. By default sent faxes are stored in the directory which is currently selected in the Fax Browser. If you prefer, you can store sent faxes in your personal fax directory. The Compose Properties window lets you specify where sent faxes are stored.

---

To use the current Fax Browser directory, select Current Fax Directory in Fax Browser Window. To use a personal fax directory, select Your Personal Fax Directory and enter a full pathname in the field (or use the File Browser by pressing the dotted button). Press Save to save that value as a permanent setting.

## Using PostScript Fonts

By default IsoFax/MX uses bitmap fonts when composing faxes. Bitmap fonts are faster, but not as nice looking as PostScript fonts. You can choose to use PostScript fonts when composing a fax by selecting Convert Text to PostScript. Press Save to implement the change. Note that PostScript faxes take longer to compose.

## Retaining White Space Between Components

By default, IsoFax/MX removes any white space from the bottom of documents, allowing as many components (documents) as possible to fit on a page. Thus, text from the message area can begin on the cover page if the cover document does not take a full page. In many cases, this treatment of white space is desirable since it saves fax transmission time and materials.

However, you may want to retain the white space for specific faxes. To do so, select Keep Blank Space at Bottom of Documents in the Compose Properties window. Press Save to implement the change.

---

**Note:** You can also insert page breaks between component documents using the Components Option feature on the main window.

## Suppressing Margins above Images

By default, IsoFax/MX leaves a margin at the top of a page before including an image document (such as, TIFF, Sun Raster, bitmap, and so on; PostScript is not considered an image format). Sometimes this extra space is undesirable. For example, an image file created from a scanned document contains a complete page description, including any white space at the top. The extra IsoFax/MX margin may create too much white space and may prevent the scanned image from fitting on one page.

To disable the margin above images, select Suppress Margin above Images in the Compose Properties window. Press Save to save that value as a permanent setting.

---

## Reviewing and Changing Job Information

When a fax enters the Fax Queue to be sent, you can monitor its progress and even make changes to it. We discussed some of the changes in “Step Four: Monitoring a Sent Fax,” on page 11-17. You can gather even more information and make more changes to a fax in the queue through the Job Information window.

To display the Job Information window, highlight a fax in the Fax Queue (in the main window) and press More Info. Figure 11-14 shows the IsoFax/MX Job Information window. To close the window at any time, press Dismiss.

The Job Information window shows the sender, the recipient, and the status of the selected fax. In Figure 11-14, some of the fields are lighter than others. These fields are ones you can change directly on the Job Information window. These fields include:

- Recipient’s fax number
- Billing code
- Maximum number of attempts (also changed by the +/- try buttons on the Fax Queue)
- Time of next attempt (also changed by the +/- hour and minute buttons on the Fax Queue)

Making these changes on this window keeps you from having to delete and recreate faxes that may contain incorrect information.

To make a change, enter the correct information and press Apply Changes. Before you press Apply Changes, pressing Undo Changes reverses your changes.

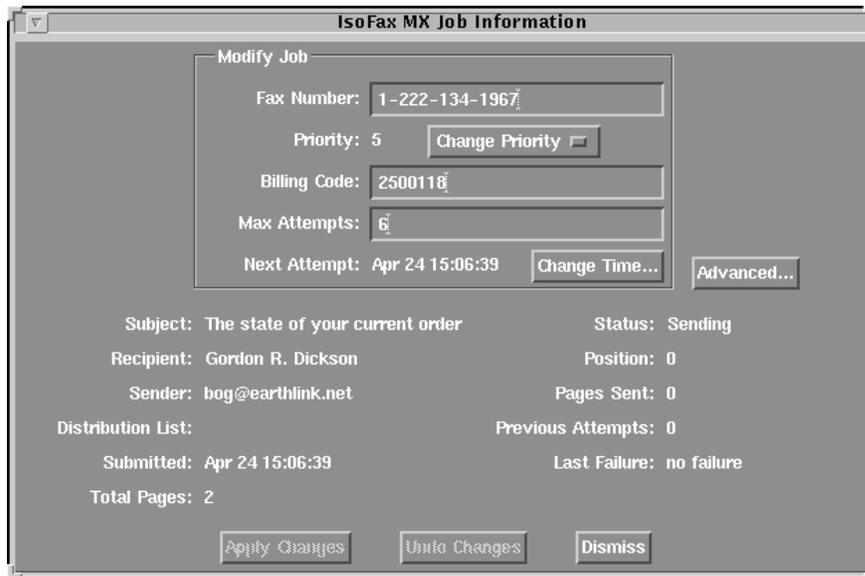


Figure 11-14: IsoFax/MX Job Information Window

## Tips for Using the Fax Queue

The following tips for using the Fax Queue can enhance your system's performance and usage of IsoFax/MX.

- If your network has heavy traffic, you may want to turn off the Fax Queue to decrease the activity caused by updating your queue every few seconds. To turn the Fax Queue off or on, select the appropriate setting in the top right corner of the Fax Queue section.
- Faxes are sent according to the *server's* time, not your workstation's time. However, the time you choose for sending faxes later is based on your *workstation's* clock. If for some reason your workstation and server do not have the same time, you may experience difficulty with Send Later faxes. The server time appears in the Fax Queue section of the main window. Refer to that time when setting up faxes to be sent at a later time.
- The quickest way to transmit your fax immediately (or as soon as a modem is available on the fax server) is to highlight the fax and press Retry ASAP to the bottom left of the queue list.
- Always wait a few seconds for the list to update itself after pressing a button. If the list does not appear to update itself right away, you can turn the Fax Queue off and on again to force an update.

- 
- A sash, in the form of a small square on the right side of the main window between the Send section and the Fax Queue section, allows you to change the size ratio between the upper half of the window and the Fax Queue section. By dragging the sash up or down, you can increase the Fax Queue area to occupy the entire area of the main window or decrease it to completely disappear.

## Changing the IsoFax/MX Window Colors

IsoFax/MX allows you to change some or all of the colors used for windows. To change the colors, select Color Setup from the Utilities menu of the main window. The Color Setup window lets you change the base color as well as the hue and brightness of current colors.

To change a color you must first select a screen area such as a background or field. You can also select an entire area including the background *and* any fields or buttons contained in the area. Once you have selected an area, use the sliders to change the color. The preview window in the Color Setup window lets you see the color before applying it. Press Apply to save the color.

## Faxing via IsoFax/MX from Other Applications

You can send a fax via IsoFax/MX from any application that allows you to select a specific printer. For example, you can fax a letter directly from your word processing programming simply by selecting the IsoFax/MX “printer.” This section describes how to install and use the *print\_to\_isofax\_mx* script, which provides this faxing capability.

---

## Installing `print_to_isofax_mx`

To install the `print_to_isofax_mx` script, you must have super-user (root) privileges. If you do not have these, ask your system administrator to install this script.

To install `print_to_isofax_mx`:

1. Change directory to `${ISOFAXHOME}/utils`.
2. Type the following command:

```
./install_print_to_isofax_mx
```

This script creates a print queue named `isofax_mx` and a directory named `/usr/spool/print_to_xfax`. If this queue already exists, it is removed and recreated.

The installation script also completes several validation steps. If it encounters any problems, the script generates error messages to help diagnose and resolve the problems.

## Using `print_to_isofax_mx`

In general, you won't know that you are using `print_to_isofax_mx`.

To send a print job from an application:

1. Make sure IsoFax/MX is running, either in a window or as an icon. Also, make sure that the application you wish to fax from and IsoFax/MX are using the same display.
2. In the other application, select the printer `isofax_mx` from the available printer list.
3. Send the job to the `isofax_mx` printer. At this point, the `print_to_isofax_mx` script takes over and verifies that IsoFax/MX is running. It then copies the file to the fax spool directory and notifies IsoFax/MX that a job is spooled. IsoFax/MX responds by displaying the main window. The "printed" document appears in the Fax Components list.

# 12

## FAXTERM

---

Although IsoFax/MX provides an easy-to-use graphical interface, you must be at an X terminal to use it. If you have access only to a character-based terminal, you can use the IsoFax FaxTerm program to create and send faxes. Currently, FaxTerm is always hosted on a Unix platform, but may be used from a remote terminal emulator running on a PC.

FaxTerm works from any character-based terminal or terminal emulator for which there is an entry in the *ttytab* file. It is a menu-driven program with options always visible on the screen. You don't have to memorize any commands to use FaxTerm, except of course the command to start the program.

FaxTerm lets you compose, print, search for, and send faxes. You can attach ASCII or PostScript files to a FaxTerm fax. You may also create and maintain an address book, as well as manage your faxes with FaxTerm.

This chapter describes the basics of getting started and working with the FaxTerm screens.

---

## Getting Started with FaxTerm

If you have just loaded the IsoFax software yourself, or if your IsoFax administrator has set you up as a new user, you can begin composing and sending faxes immediately. However, if your installation has been customized, you may have to go to the Settings Menu before continuing. The Settings Menu is an option from the FaxTerm Main Menu. See “Settings Screen,” on page 12-19 for more information on the Settings Menu.

FaxTerm uses the current directory to read and write temporary files. Make sure that you are in an appropriate directory when you start the program. Start FaxTerm with the following command:

```
% faxterm
```

The program has no command line options.

## Main Menu

The first FaxTerm screen is the main menu, shown in Figure 12-1. The main menu gives you access to the primary FaxTerm screens. To go to another screen from the main menu, simply type in its option letter, shown in the following table, at the > prompt.

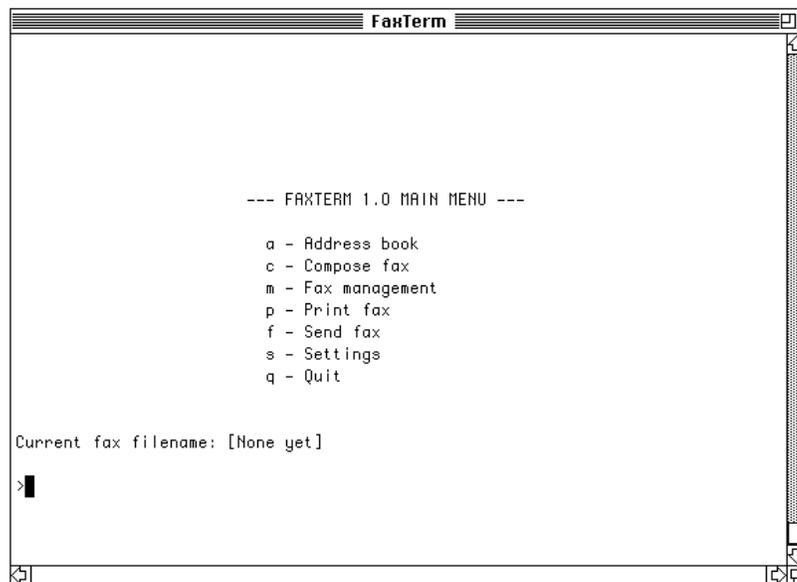


Figure 12-1: FaxTerm Main Menu

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The following table describes the commands available on the main menu.

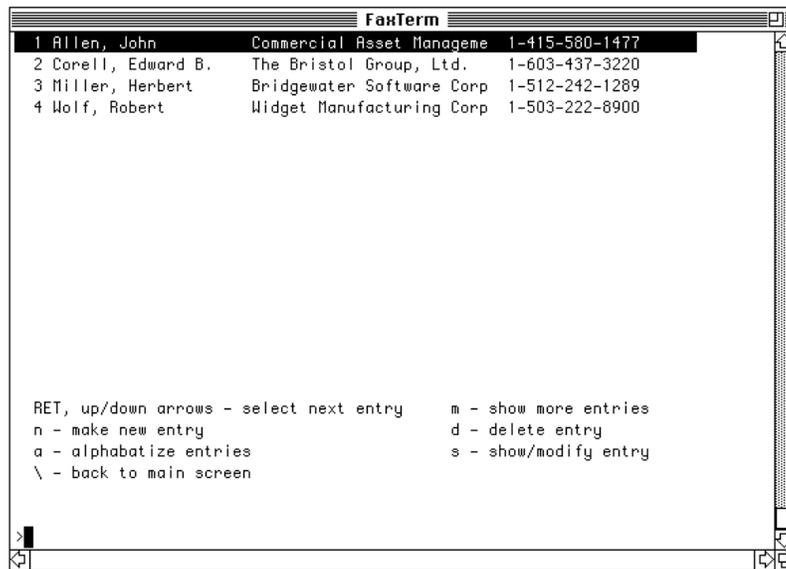
Command	Description
<i>a</i>	Displays the Address Book screen where you can select an addressee for a fax. The Address Book subscreens let you add new addresses and update information in existing ones.
<i>c</i>	Displays the Compose screen, for composing new faxes.
<i>m</i>	Displays the Faxes screen, which lists the faxes in your fax database and, if accessible, in the incoming faxes directory. You must go to this screen to select a fax for printing or sending unless the fax is one you've just composed.
<i>p</i>	Displays the Print Fax screen and prints the current fax.
<i>f</i>	Sends the current fax to the recipient you have selected. No sub-screen is displayed.
<i>s</i>	Displays the Settings screen, used to record information about yourself and your environment.
<i>q</i>	Quits FaxTerm. The program requires you to confirm the request.

---

---

## Address Book Screen

Display the Address Book screen by pressing *a* at the main menu prompt. The Address Book screen (Figure 12-2) contains a numbered list of potential fax recipients. If you don't see any entries, you either have no Address Book (unlikely) or the Address Book file in the Settings screen is incorrect.



---

Figure 12-2: FaxTerm Address Book Screen

To select a recipient from the list, use the up and down arrows or press Return to highlight the desired entry. You can select only one recipient at a time. Once you have selected a recipient, press \ to return to the main menu.

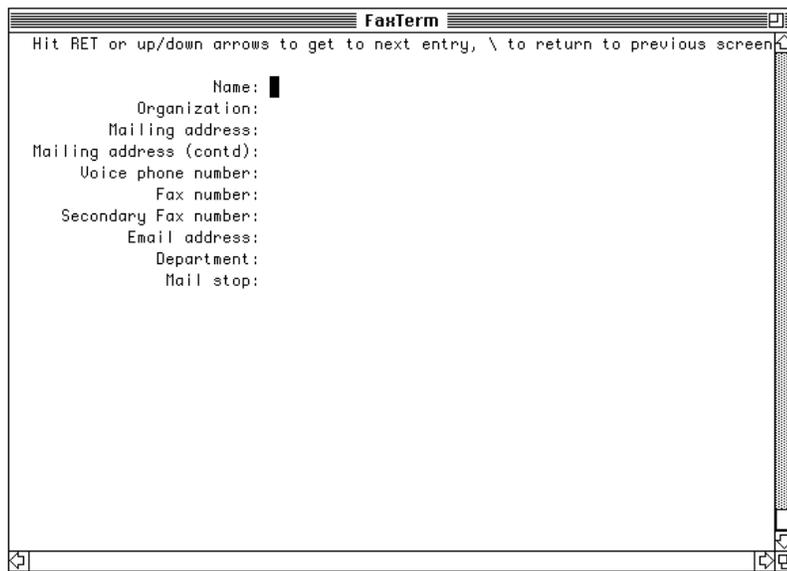


Figure 12-3: FaxTerm Make New Entry Subscreen

## Compose Screen

Display the Compose screen by pressing *c* on the main menu. The Compose screen (Figure 12-4) lets you create a fax and specify a variety of settings. The top portion of the screen contains a list of settings you can modify. The bottom portion lists the options available from this screen.

---

**Note:** If you want FaxTerm to automatically generate a cover sheet, select a recipient from the Address Book before composing the fax.

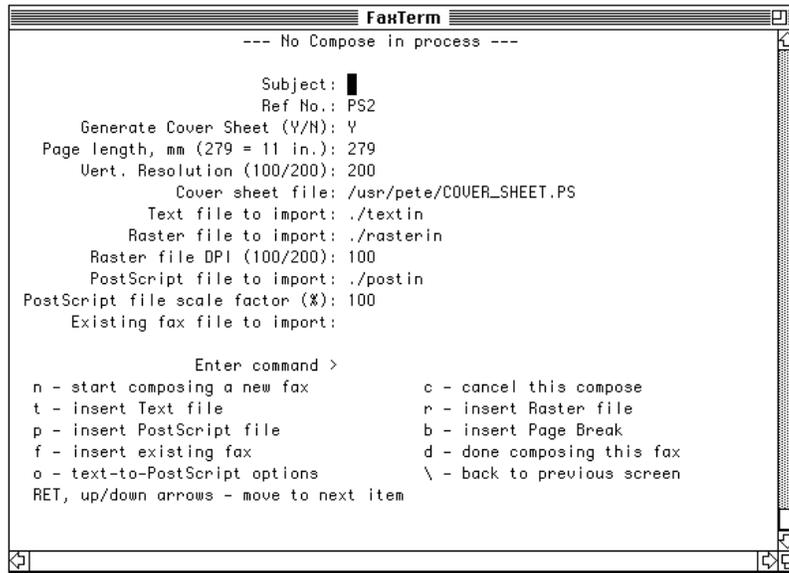


Figure 12-4: FaxTerm Compose Screen

## Settings in the Compose Screen

You can change a variety of settings on the Compose screen to suit your needs. The following table describes the compose settings.

Setting	Description
<i>Subject:</i>	The subject of the fax as you want it to appear on the cover sheet (if requested) and in the fax log.
<i>Ref No.:</i>	The reference ID code number for this fax. Normally, you set this once, to something like <i>WAS100</i> , where <i>WAS</i> are your initials and you want to start numbering at 100.  After you've composed your fax, FaxTerm automatically increases the reference ID number by one; for example, from <i>WAS100</i> to <i>WAS101</i> . The reference ID is normally inserted automatically into your cover sheet, so that recipients can let you know which fax they are responding to.

---

Setting	Description
<i>Generate Cover Sheet (Y/N):</i>	This field is set to Y (Yes) by default. If you don't want a cover sheet automatically created, enter N.
<i>Page Length, mm (279 = 11 in.):</i>	This field displays the maximum page length allowed, after approximately 6 mm (1/4 inch) is provided for a transmission header (supplied by the fax server when the fax is sent). If a PostScript or Raster file generates a graphical image exceeding the specified length, the image will be truncated at the bottom. For maximum flexibility, this number is sampled by FaxTerm at the beginning of each page.
<i>Vertical Resolution (100/200):</i>	The Vertical Resolution field tells FaxTerm what resolution to use in composing the fax. The default setting of 200 dpi specifies a fine resolution fax with approximately 196 horizontal lines per inch. You can change this to 100 dpi for a coarse or normal resolution fax with approximately 98 horizontal lines per inch. No other values are allowed.
<i>Cover Sheet File:</i>	The file for FaxTerm to use as a cover sheet template file (assuming you choose to generate a cover sheet).
<i>Text File to Import:</i>	The pathname of a file you want FaxTerm to import when you use the Insert Text File command (described below).
<i>Raster File to Import:</i>	The pathname of a file you want FaxTerm to import when you use the Insert Raster File command (described below).

---

Setting	Description
<i>Raster File DPI(100/200):</i>	Specifies whether FaxTerm should interpret imported Raster files (inserted with the Insert Raster File command) in 100 dpi or 200 dpi resolution.
<i>PostScript File to Import:</i>	The pathname of the PostScript file you want FaxTerm to insert when you use the Insert PostScript File command (described below).
<i>PostScript File Scale Factor (%):</i>	The percentage by which FaxTerm should shrink or enlarge a PostScript file when inserting it into the current fax. This scaling also applies to PostScript cover sheets and text files imported as PostScript using the Text-to-PostScript option.
<i>Existing Fax File to Import:</i>	The pathname of an existing fax file you want to insert using the Insert Existing Fax command (described below). If you select a fax in the Fax Management screen before displaying the Compose screen, that fax appears as the default file to import.

---

## Commands in the Compose Screen

The following table describes the commands available on the Compose screen.

Command	Description
<i>n</i>	Lets you compose a new fax. FaxTerm builds a fax filename (based on the recipient name), which appears at the top of the Compose screen. Before composing a new fax, check the compose settings.
<i>c</i>	Abort the current compose process.

---

Command	Description
<i>t</i>	Retrieves the text (ASCII) file specified in the <i>Text File to Import</i> field and insert it in the current fax. FaxTerm inserts pages according to the selected maximum page length. The text file may contain IsoFax escape sequences. You can also have FaxTerm convert a text file to PostScript during the insertion by setting the <i>Insert Text as PostScript</i> option on the Settings screen.
<i>r</i>	Retrieves the Sun Raster format file specified in the <i>Raster File to Import</i> field and insert it in the current fax, using the resolution specified in the Raster File DPI setting. If the contents of the fax page extend beyond the maximum allowable page length, FaxTerm generates a new page. If the image size exceeds the maximum page size ( <i>Page Length</i> ), FaxTerm truncates the bottom of the image.
<i>p</i>	Interprets and inserts the resulting PostScript image of the file specified in the <i>PostScript File to Import</i> field. If the contents of the fax page extend beyond the maximum allowable page length, FaxTerm generates a new page. If the image size exceeds the maximum page size ( <i>Page Length</i> ), FaxTerm truncates the bottom of the image.
<i>b</i>	Starts a new page in the current fax.
<i>f</i>	Inserts the entire fax named in the <i>Existing Fax File To Import</i> field.
<i>o</i>	Displays the Text-to-PostScript Options subscreen to modify the appearance of plain text files imported with the <i>t</i> command.
<i>d</i>	Closes the current fax. When the cursor returns to the Compose screen's prompt, press \ to return to the main menu and print or send the composed fax.

---

---

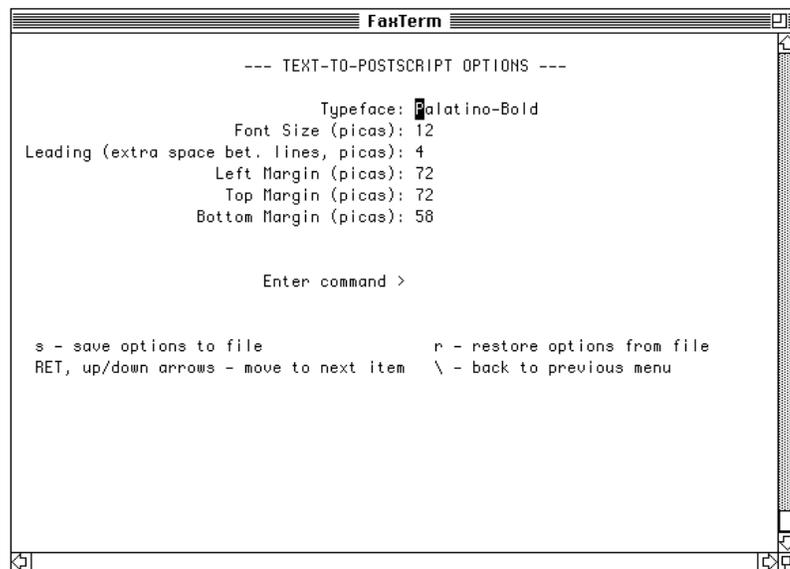
## Text-to-PostScript Options Subscreen

Display the Text-to-Postscript screen by pressing *o* on the Compose screen. Use this screen (Figure 12-5) to alter the appearance of text files which you import into your faxes using the Insert Text File (*t*) command. Like the Compose screen, this screen has several settings at the top followed by several command options.

The items you can set in this screen are generally self-explanatory. You must choose a typeface that is available in the GhostScript® library (or, for IsoFax releases earlier than 5.2, the Freedom of Press® library). Generally speaking, heavier typefaces image better at the 200 dpi fax resolution than do lighter typefaces, especially at smaller font sizes.

The page layout scheme FaxTerm uses is very simple. It does not attempt to break lines. Line breaks come only where the input text contains a CR character (ASCII 13). Page breaks occur when the bottom margin is reached.

You can set the top, left, and bottom margins on this screen. If you require line adjustment, multiple typefaces per fax, or other more sophisticated layout capability, do not use the Text-to-PostScript option. Instead, use a page layout program such as IslandDraw and directly import the PostScript output of that program when composing your fax.



---

Figure 12-5: FaxTerm Text-to-PostScript Settings Subscreen

---

The following table describes the commands available on the Text-to-Postscript screen.

Command	Description
<i>s</i>	Makes the current settings permanent by writing them to a file called <i>tps_settings</i> in your home directory.
<i>r</i>	Restores the last settings saved.

## Fax Management Screen

Display the Fax Management screen by pressing *m* in the main menu. Use this screen (Figure 12-6) for filing, searching, and maintaining your fax database.

```
Current folder: 'MY DEFAULT FOLDER'
Secondary folder: 'SERVER INCOMING FAX DIRECTORY'

 1 Sep 13  PN154  4  Sample_fax_1.d  Product Sheet
 2 Sep 13  PN151  2  Sample_fax_2.d  Quote
 3 Sep 13  PN150  2  Sample_fax_3.d  Frame Quick Ref.
 4 Sep 13   PS36  1  Sample_fax_4.d  Sample text and raster fax
 5 Sep 13  PN153  4  Sample_fax_1    Product Sheet
 6 Sep 13  PN151  2  Sample_fax_2    Quote
 7 Sep 13  PN139  2  Sample_fax_3    Frame Quick Ref.
 8 Sep 13   PS37  1  Sample_fax_4    Sample text and raster fax
(end)

RET, up/down arrows - select next fax      m - show more faxes
c - clone (duplicate) fax                   \ - back to main screen
d - delete fax                               r - rename fax
s - search for fax(es)                       a - show/modify attributes
f - show folders                             t - transfer fax to secondary folder
o - switch to Secondary (other) folder       e - delete folder

>|
```

Figure 12-6: FaxTerm Fax Management Screen

---

## Folders

Fax management is based on having folders in which you keep faxes. A folder is simply a group of faxes filed together because they have something in common. For example, you might have one folder for faxes covering the same general subject and another for faxes to and from the same person or group.

You can create new folders and move faxes back and forth between folders. Although an original fax may be filed in only one folder, you can make a copy of it and put the copy in another folder. While you manage faxes from the Fax Management screen, you manage folders from the Folders subscreen.

Display the Folders subscreen by pressing *f* in the Fax Management screen. Use this screen (Figure 12-7) to manage your folders.

```
Current folder: 'MY DEFAULT FOLDER'
Secondary folder: 'SERVER INCOMING FAX DIRECTORY'
1 MY DEFAULT FOLDER
2 SERVER INCOMING FAX DIRECTORY
3 ALL MY FAXES
(end)

RET, up/down arrows - select next folder    m - show more folders
s - choose secondary folder                  n - make new folder
r - rename folder                            b - rebuild database
\ - back to previous screen (showing faxes in selected folder)
      (Return to previous screen to delete selected folder)
```



---

Figure 12-7: FaxTerm Folders Subscreen

---

The following table describes the commands available on the Folders subscreen.

Command	Description
<i>s</i>	Selects the highlighted folder as the new secondary folder.
<i>m</i>	Displays additional folders.
<i>n</i>	Creates a new folder with no faxes in it. You must name the folder.
<i>r</i>	Renames the current folder. Folder names may contain spaces.
<i>b</i>	Rebuilds the database if it has been corrupted. FaxTerm generates a new fax index file from all the fax headers in your personal directory or from the incoming directory if the current folder is the <i>SERVER INCOMING FAX DIRECTORY</i> .

---

FaxTerm has three special folders:

- *MY DEFAULT FOLDER* contains all faxes that you haven't assigned to another folder.
- *ALL MY FAXES* is a super-folder; that is, it contains all the faxes in all your folders. This folder is useful when you're searching for a particular fax and don't know which folder it is in.
- The third special folder, called *SERVER INCOMING FAX DIRECTORY*, contains incoming faxes that have not yet been distributed. This folder is special in that it does not exist in your fax directory, but is a window into another directory—the server's incoming fax directory. This is a shared directory, which you may or may not be able to read, depending on how your fax administrator has set up your installation.

---

**Note:** When you compose a fax, you should not be in the *SERVER INCOMING FAX DIRECTORY* folder. If you are, FaxTerm automatically places the new fax in the *MY DEFAULT FOLDER*.

---

At any given time, two of the three folders are designated as either Current or Secondary. The Current folder is the one currently selected, in which you are working. The Secondary folder is the folder into which you can move faxes from the Current folder. Both folder names are shown at the top of the Fax Management screen. You select Current and Secondary with commands in the Folders subscreen of the Fax Management screen.

## Commands in the Fax Management Screen

The following table describes the commands available on the Fax Management screen.

Command	Description
<i>m</i>	Shows another screen of fax filenames.
<i>c</i>	Makes a copy of the currently selected fax.
<i>d</i>	Deletes the currently selected fax. FaxTerm asks you to confirm the deletion.
<i>r</i>	Renames a fax. If you choose a name already in use, FaxTerm will suggest a new name consisting of the chosen name and a sequence number.
<i>s</i>	Displays the Fax Attribute Search screen.
<i>a</i>	Displays the attributes for the selected fax. You may change any attribute except the folder name. (Use the <i>t</i> command to move the fax to another folder.)
<i>f</i>	Displays the Folders screen (see “Folders,” on page 12-14.)
<i>t</i>	Moves the current fax from the current folder to the secondary folder. This command does not copy the current fax.
<i>o</i>	Makes the secondary folder the current folder.
<i>e</i>	Deletes the current folder. You must first remove all the faxes from the folder.

---

## FaxTerm Fax Attribute Search Subscreen

FaxTerm lets you quickly locate faxes using flexible search criteria. For example, you may search for all faxes to or from a given organization or about a particular subject. You can search through specific folders or through all your folders by selecting ALL MY FAXES as the current folder.

Display the Fax Attribute Search subscreen by pressing *s* on the Fax Management screen. This screen (Figure 12-8) lists several search fields (attributes) followed by a few commands.

```
--- Fax Attribute Search, Folder: 'MY DEFAULT FOLDER' ---
      Filename: -- Fax Attribute Search, Folder: 'MY DEFAULT FOLDER' --
      Subject:
      Date:
      Ref No.:
      Keywords:
      Recipient name:
      Recipient org.:
      Recipient dept.:
      Recipient fax #:
      Recipient email addr.:
      Sender name:
      Sender org.:
      Sender dept.:
      Sender fax #:
      Sender email addr.:
>
RETURN - move to next item          \ - back to prev screen
s - perform search                  c - clear all attributes
t - toggle search rule

Search rule: ALL nonblank items must match. (Toggle with 't')
```

---

Figure 12-8: FaxTerm Fax Attribute Search Subscreen

## Attribute Searches

The fields at the top of the Fax Attribute Search subscreen let you search for one or more attributes for a particular fax or group of faxes. An attribute includes a keyword and a value. The fields listed on the screen provide the keywords. You must enter the value, which is also called a search key.

Note the following rules when making fax attribute searches:

- All non-blank (that is, filled in) search keys must match to find a given fax, unless you toggle this rule by using the *t* command. The *t* command toggles to the alternate search rule, which requires only one non-blank, matching search key.

- 
- You can prefix search keys with an optional + sign. Without the +, a match occurs only if a fax's attribute value for that particular keyword is non-blank and contains the search key. If the search key is preceded by a + sign, a match can also occur if a fax's attribute value for that particular keyword is left blank.
  - Searches are not case-sensitive.
  - Non-alphanumeric characters are ignored in both attributes and attribute search keys. (The + sign, which can precede an attribute search key, is not considered part of the key.)

## Commands in the Fax Attribute Search Subscreen

The following table describes the commands available on the Fax Attribute Search subscreen.

Command	Description
<i>s</i>	Executes the search when you have completed the search keys.
<i>c</i>	Clears all the search values before beginning a new search.
<i>t</i>	Toggles to the alternate search rule in which only one non-blank search key is required.

---

## Settings Screen

Display the Settings screen by pressing *s* on the main menu. Use this screen (Figure 12-9) to view and change your FaxTerm preferences and settings. Most of the screen contains a list of settings. To see available commands on this screen, press *\*.

```
--- FAX SETTINGS ---
  Your Fax Directory: /slc/home/bristol/IsoFax/solaris/faxes
  Incoming Fax Directory: /slc/home/bristol/IsoFax/solaris/incoming
Address Book File (full path): /slc/home/bristol/IsoFax/solaris/fax_phones
  Name of your Fax Server: SLC
  Name of your License Server: SLC
  Your Email Address:
  Printer Name (e.g., "lw"):
  Your Name:
  Your Department:
  Your Organization:
  Your Primary Fax Number:
  Your Secondary Fax Number:
  Your Voice Number:
  Your Fax Equipment:
  Your Mailstop:
  Your Mailing Address:
Crop long printed pages (Y/N): N
Import text as PostScpt (Y/N): N
  Scramble code (not saved):

Hit Return or up/down arrows to get to next item, \ for anything else
```

---

Figure 12-9: FaxTerm Settings Screen

## Settings in the Settings Screen

The preferences, personal information, and environment settings on the Settings screen are as follows:

- |                               |   |
|-------------------------------|---|
| <i>Your Fax Directory</i>     | The directory where FaxTerm places your personal incoming and outgoing faxes.   |
| <i>Incoming Fax Directory</i> | The directory where the fax server ( <i>faxd</i> ) places incoming faxes. This directory must be local to your workstation or effectively local via an NFS remote filesystem mount. |

---

<i>Address Book File (full path)</i>	The file where FaxTerm looks for your address book. If this field is blank, FaxTerm looks in your home directory for a file called <i>fax_phones</i> . Next it searches for the same file in the current directory.
<i>Name of Your Fax Server</i>	The name of the host machine running the Bristol fax server, <i>faxd</i> . If this entry is blank, FaxTerm cannot send faxes.
<i>Name of Your License Server</i>	The name of the host machine running the Bristol license server, <i>blserver</i> . If this entry is blank, FaxTerm cannot send faxes.
<i>Your Email Address</i>	The email address FaxTerm uses on cover sheets (if specified). The fax server also uses this address to notify you of your outgoing fax's status.
<i>Printer Name</i>	The name of the PostScript printer used for printing FaxTerm faxes. The default is <i>lw</i> . Check with your system administrator to make sure the default name is acceptable.
<i>Your Name</i>	Enter your name exactly as you want it to appear on your fax cover sheets and in the fax database.
<i>Your Department</i>	Enter your department name exactly as you want it appear on your fax cover sheets and the fax database.
<i>Your Organization</i>	Enter your organization name exactly as you want it appear on your fax cover sheets and the fax database.
<i>Your Primary Fax Number</i>	Enter your primary fax number exactly as you want it appear on your fax cover sheets and the fax database.

---

<i>Your Secondary Fax Number</i>	Enter an alternate fax number for recipients to use if your primary number is not working.
<i>Your Voice Number</i>	Enter your voice phone number exactly as you want it to appear on your fax cover sheets and the fax database.
<i>Your Fax Equipment</i>	By default this field is <i>IsoFax x.x</i> , where <i>x.x</i> is the software version.
<i>Your Mailstop</i>	Enter your mailstop exactly as you want it to appear on your fax cover sheets and the fax database.
<i>Your Mailing Address</i>	Enter your mailing address exactly as you want it to appear on your fax cover sheets and the fax database.
<i>Crop Long Printed Pages (Y/N)</i>	Set this option to Yes (Y) to have FaxTerm print only the first 11 inches on each page. By default, FaxTerm prints pages longer than 11 inches by generating additional pages.
<i>Insert Text as PostScript (Y/N)</i>	Set this option to Yes (Y) to have FaxTerm convert text files to PostScript before inserting them into your fax. PostScript gives you higher resolution and more font choices.
<i>Scramble Code (not saved)</i>	The scramble code is an alphanumeric string of up to 15 characters used to scramble and unscramble faxes. Note the following: <ul style="list-style-type: none"><li>— The first page is never scrambled.</li><li>— The scramble code is not saved; you must enter your code each time you want to send or read a scrambled fax.</li></ul>

---

## Commands in the Settings Screen

To use the commands specific to the Settings screen, press \. Press Return to continue editing the settings. The following table describes the commands available on this screen.

Command	Description
<i>s</i>	Makes the current settings permanent.
<i>r</i>	Restores the settings to the last saved version (that is, the last time you pressed <i>s</i> ).

---

## Print Screen

Display the Print screen by pressing *p* on the Main Menu. Use this screen (Figure 12-10) to print a fax selected from the Fax Management screen or one you have just composed. When you select the print option, the name of the current fax appears at the top of this screen.

```
--- FAXTERM PRINT ---
Current fax filename: Sample_fax_1.d
First page to print: 1
Last page to print: (Last fax page)

Enter command > 

p - Print
c - Compress, then print
h - Help
\ - Back to main menu
RETURN - Move to next item
```

---

Figure 12-10: FaxTerm Print Screen

---

To print your fax:

1. Set the first page to print. By default this is page one.
2. Set the last page to print. By default this is the last page of the fax.
3. Do one of the following:

Press	To...
<i>p</i>	Spool the print job. Use this command if you have a slow PostScript printer (e.g., LaserWriter Plus) and/or a high-speed (>2,000 cps) channel between the print server and the printer.
<i>c</i>	Compress and then spool the print job. Use this command if you have a fast PostScript printer and a relatively uncluttered fax (for example, text with no halftone images).

---



# 13

## EMAIL AND ISO FAX

---

Electronic mail has become an increasingly common way to communicate, but not all people to whom you want to send email can receive it. However, if the recipients can receive a fax, you can send them email via IsoFax. You use your favorite mail program to create an email message and then IsoFax converts and sends the email message as a fax.

IsoFax includes two programs that send faxes from electronic mail. You should select the one appropriate to your needs, as described below:

- *mimifax*, the more flexible program, accepts attachments from any MIME (Multipurpose Internet Mail Extensions) mail program.
- *faxmail2* is primarily for users of Sun's *mailtool*. It accepts attachments from *mailtool* (particular graphics files), which *mimifax* cannot accept.

This chapter describes both programs and how you use them to send faxes via email.

---

## mimefax

You can use *mimefax* with any MIME compliant mail program, such as Z Mail and Sun-mail (beginning with Solaris 2.5) . Mail messages can include PostScript, ASCII, *tiff*, *pict*, *pcx*, *xbm*, and other file types, provided they are imageable with IsoFax. *mimefax* automatically decodes, decompresses, and images attachments as required to send them to the recipient via the IsoFax server.

### Setting up mimefax (Unix)

The IsoFax system administrator is responsible for setting up and maintaining *mimefax*. Once *mimefax* is set up, anyone on the network can use it.

To set up *mimefax*, follow these steps:

1. Add a user named *isofax*. (You can select another name; *isofax* is the default.)
2. In *isofax*'s home directory, create a file named *.forward*.
3. Add the following information (on one line) to the *.forward* file:

```
" /mimefax_path coversheet_path license_server fax_server"
```

where *mimefax\_path* is the full path to *mimefax*; *coversheet\_path* is the full path to an appropriate IsoFax cover sheet; *license\_server* and *fax\_server* are the names of host machines currently running the Bristol license server and fax server software, respectively. If these arguments are not present, *mimefax* assumes the local host for both servers. Make sure you include the quotation marks and leading vertical bar in the entry.

---

**Note:** If you want to have more than one cover sheet available to *mimefax* users, set up an account for each cover sheet. Then let users choose which cover sheet to use by sending the email to the appropriate account.

---

## Setting up mimefax (NT)

The IsoFax system administrator is responsible for setting up and maintaining *mimefax*. Once *mimefax* is set up, anyone on the network can use it.

To set up *mimefax*, follow these steps:

1. Add a mail user named *isofax*.
2. In the *[admin]* IsoFax user account, set *pop\_host*, *pop\_user*, *pop\_password*, and *mimefax\_args*. This is normally done from a browser directed to the IsoFax administration site. For details, please see the previous chapter, "User Configuration."

## Using mimefax

In general, you won't know that you are using *mimefax*. You simply send an email message in the either of the following ways:

- Format the **To:** field of the mail header as follows:

*Human name/fax phone number <mimefax account name>*

For example:

**To: H. Rodman/403 535-5322 <isofax@widgets.com>**

This is parsed into three fields, each of which is stripped of leading and trailing white space. The **:** and **/** delimit the first field, recipient name. The **/** and **<** delimit the second field, fax number. The **<** and **>** delimit the third field, which is the effective email address. This construction is preferred because it works well with aliases.

- Embed the fax routing information in the email header by using the keywords **x-Recip** and **x-Fax** in the email header.

For example:

**To: isofax@widgets.com**

**x-Fax: 403 535-5322**

**x-Recip: H. Rodman**

---

After addressing the email, send it as usual. IsoFax notifies you via email when the fax has been sent or if there was some problem in sending.

---

**Important:** For purposes of associating MIME-encoded IsoFax files with the IsoFax viewer *viewfax*, the application designator is `content-type application/x-isofax`. Do not attach non-imageable MIME files (such as audio files) to *mimifax*. These types of files may cause *mimifax* to fail.

## faxmail2 (Unix only)

You can use *faxmail2* with most email programs, but it is especially tailored to work with Sun *mailtool*. Sun *mailtool* users can include PostScript, ASCII, *tiff*, Sun Raster, *xbm*, and other file types, provided they are imageable with IsoFax. *faxmail2* automatically uudecodes and decompresses them, as required before sending them via the fax server.

---

**Note:** Previous IsoFax users may be familiar with *faxmail*, a shell script for using email to send faxes. *faxmail2* supersedes *faxmail* and should be used in any case where *mimifax* cannot be used. Although *faxmail* and *faxmail2* are similar, note important differences in the following sections for setting up and using *faxmail2*.

## Setting up faxmail2

Unlike *mimifax*, which is set up once for the entire site, *faxmail2* must be set up for each host. Setup includes creating an alias for each recipient and ensuring that environment variables are correctly defined.

### Creating Aliases

To send email via IsoFax using *faxmail2*, you must have an alias for each recipient in the `/etc/aliases` file. The alias must include an alias name for the recipient as well as their full name and fax number.

For example:

```
alias billfax "| faxmail2_path 'Wm Smith' '555-1212'"
```

---

This line allows you to send email to *billfax* and have it routed through *faxmail2*. Note that the *faxmail2* entry in this line must include the full path to the program.

---

**Important:** Do not put fax aliases in *~/.mailrc*. Sun *mailtool* will corrupt them. (Aliases established in *mailtool* are maintained in *~/.mailrc*.)

### Setting Environment Variables

Make sure the following environment variables are set correctly before using *faxmail2*:

LICENSESERVER	Set to the name of the host running the Bristol license server ( <i>blserver</i> ). Defaults to the current host.
FAXSERVER	Set to the name of the host running the Bristol fax server ( <i>faxd</i> ). Defaults to the current host.
ISOFAHOME	Set so <i>enfax</i> can find the Alchemy Filter Pack.
OPENWINHOME	Set so <i>mp</i> can find its prologue files.

In addition to setting the above environment variables, you must make sure that *mp*, *uudecode*, and *uncompress* are in your path.

### Using faxmail2

Once *faxmail2* is set up, using it is quite easy. You simply use the alias name for the desired recipient in the To: field of your email program. For example:

```
To: billfax
```

Complete your email message and attach files as necessary before sending. Your email will be processed and sent as a fax to the recipient.

---

**Note:** Since *faxmail2* does not support MIME standard mail attachments, non-imageable attachments can render an email message un-faxable.



# 14

## CREATING CUSTOM COVER SHEETS

IsoFax comes with several sample cover sheets, both ASCII and PostScript, which you can use without modification. The files *COVER\_SHEET* and *COVER\_SHEET.PS* in the main IsoFax directory are sample ASCII and PostScript cover sheets, respectively. In addition, the *samples* directory contains several more sample PostScript cover sheets.

The sample cover sheets include fields for such items as your name, company name, fax number, and email address. Information for these fields are merged into the cover sheet either from the IsoFax/MX Personal Information form (from the Properties menu) or through command line options in the Fax Toolkit program *enfax*.

You can customize your own cover sheets by modifying the sample cover sheets or by creating new ones. For example, you may want to include your company logo on the fax or use a special cover sheet for sending specific kinds of faxes.

---

To help you create custom cover sheets, IsoFax includes a standard list of escape sequences for including information fields in either ASCII or PostScript files. For ASCII cover sheets, you can also specify fonts and other formatting information by including IsoFax directives. PostScript cover sheets include all their formatting as a matter of course.

This chapter describes the cover sheet escape sequences and ASCII formatting directives and provides instructions on using them.

---

**Note:** If you have problems with Microsoft Word PostScript files, see “Problems with Microsoft Word PostScript Files” in Appendix B, *Troubleshooting*.

## Server Cover Sheets

In the IsoFax client-server model, documents are generally imaged on the client machine and then transferred to the fax server for transmission. For a variety of reasons, such as efficiency and security, it is desirable to off-load the responsibility for imaging to the server. This is accomplished through three client-preference override attributes in *USER\_LIST.info*: *cover\_locus*, *server\_cover\_list*, and *server\_cover\_list\_gui*. For detailed instructions, see “Server Cover Sheets” in Chapter 9, *IsoFax Administration*.

## Including Escape Sequences

Escape sequences for inserting custom information into cover sheet fields are two characters for ASCII files, and three characters for PostScript files. Escape sequences can be placed anywhere in the file. If IsoFax encounters an escape sequence for which no information is available when processing a specific fax (such as the sender’s department), IsoFax leaves the field blank.

Note that the escape sequences also apply to any text file or PostScript file that IsoFax/MX, FaxTerm, or *enfax* integrates into a fax. We recommend you turn off escape sequence processing, especially if you fax program listings or non-English language documents.

---

When you create a new cover sheet, you can design the page using your favorite word processor and insert escape sequences where appropriate. Since the escape sequences differ slightly for ASCII and PostScript cover sheets, make sure you enter them correctly for the type of output you want.

---

**Important:** Save your cover sheet file as a PostScript file, *not* as a word-processor file. To be sure that the file is in the correct format, simply copy it to a PostScript printer. If it prints correctly, it will fax correctly from IsoFax.

In ASCII cover sheets, escape sequences start with the backslash character (\). In PostScript files, escape sequences start with a combined left brace and right square bracket ({}). The following table lists the escape sequences IsoFax recognizes. Although you can place them anywhere in the file, we suggest you look at the sample cover sheet files as models.

ASCII Sequence	PostScript Sequence	IsoFax Action
\\	{}\	Insert \ .
\d	{}d	Insert today's date in international format.
\e	{}e	Insert recipient's electronic mail address.
\E	{}E	Insert sender's email address.
\f	{}f	Insert recipient's fax phone number.
\F	{}F	Insert sender's fax phone number.
\g	{}g	Insert recipient's group (department).
\G	{}G	Insert sender's group (department).
\h	{}h	Insert salutation (for example, Dear ).
\i	{}i	Insert fax reference ID.
\m	{}m	Insert recipient's mail stop.

---

ASCII Sequence	PostScript Sequence	IsoFax Action
<code>\M</code>	<code>{M}</code>	Insert sender's mail stop.
<code>\n</code>	<code>{n}</code>	Insert recipient's name.
<code>\N</code>	<code>{N}</code>	Insert sender's name.
<code>\o</code>	<code>{o}</code>	Insert recipient's organization.
<code>\O</code>	<code>{O}</code>	Insert sender's organization.
<code>\p</code>	<code>{p}</code>	Insert total number of pages in this fax, excluding the cover sheet.
<code>\P</code>	<code>{P}</code>	Insert total number of pages in this fax, including the cover sheet.
<code>\s</code>	<code>{s}</code>	Insert subject.
<code>\v</code>	<code>{v}</code>	Insert recipient's voice phone number.
<code>\V</code>	<code>{V}</code>	Insert sender's voice phone number.
<code>\x</code>	<code>{x}</code>	Stop processing escape sequences. Use this at the end of your cover sheet to prevent IsoFax from processing backslashes in attached documents. Note that you cannot restore escape sequence processing.
<code>\1</code>	<code>{1}</code>	Insert first line of recipient's mailing address.
<code>\2</code>	<code>{2}</code>	Insert second line of recipient's mailing address.
<code>\!</code>	<code>{!}</code>	Insert first line of sender's mailing address.
<code>\@</code>	<code>{@}</code>	Insert second line of sender's mailing address.

---

---

## Including Cover Sheet Directives in ASCII Files

Cover sheet directives allow you to specify some formatting and layout for ASCII cover sheet files. You can select fonts, insert page breaks, and read in Raster (Sun graphics) files using directives.

Directives, like escape sequences, can be inserted freely in a text file. However, you must place a directive at the beginning of a line and precede it with a period (.). See the sample ASCII cover sheets for examples of using directives. The following table lists the IsoFax directives for ASCII cover sheets (or any ASCII text file).

Directive	IsoFax Action
<i>.C</i>	Center the current line.
<i>.P</i>	Insert page break.
<i>.Rraster_filename</i>	Insert the named Raster file here (no space after the <i>R</i> ). This directive inserts a 100 dpi Raster image.

---

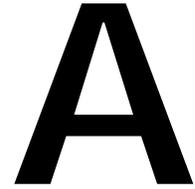
## Inserting Page Breaks in PostScript Cover Sheets

To insert a page break at the end of a PostScript cover sheet (before the message begins), place the following string anywhere in the PostScript file (remember, *not* the word processor file):

```
%Bristol Fullpage Coversheet
```

Be sure to use the initial uppercase letters as shown and insert a space between each word. (The initial % character prevents this line from showing up on your actual cover sheet when faxed.)





# POSTSCRIPT INTERPRETER

---

PostScript, a leading page description language, provides powerful typesetting and graphics functions. With PostScript fax composition, you can enhance your facsimiles with fonts for printers that support PostScript. PostScript provides the following advantages:

- High quality graphics
- Precision typeface size, style, and layout
- Access to a wide range of third-party PostScript add-on products for use in fax composition

This appendix describes the PostScript interpreter including its installation, resident fonts, installation of additional fonts, and fonts you can download. It also includes a listing of PostScript error messages.

---

## Installation

To use the PostScript interpreter you only need a font license. The following information is provided in case you should encounter problems, or if you want to move the interpreter's files to a different location.

The PostScript interpreter requires a directory named *ps\_interp* and a script named *run\_ps\_interp*, both of which should reside in the same directory as the IsoFax executables. If you wish to move these files, place them in another directory and set the environment variable `ISOFAHOME` to that directory.

The PostScript interpreter generates output files, some of which are temporarily stored in `/tmp` (Unix) or `\TMP` (NT), then deleted. The size of these files is approximately 100 KB per page at low resolution (100 dpi) or 200 KB per page at high resolution (200 dpi). Make sure your `/tmp` or `\TMP` directory has enough space available. If you want these temporary files to be generated elsewhere, set the `ISOFAXTMP` environment variable to the directory you wish to use.

## Supplied Typefaces

The following supplied typefaces are equal in shape and width to those of an Apple LaserWriter. All typeface names are the registered trademarks of their owners.

- AvantGarde-Book, AvantGarde-Demi, AvantGarde-BookOblique, AvantGarde-DemiOblique
- Bookman-Light, Bookman-Demi, Bookman-LightItalic, Bookman-DemiItalic
- Courier, Courier-Oblique, Courier-Bold, Courier-BoldOblique
- Helvetica, Helvetica-Oblique, Helvetica-Bold, Helvetica-BoldOblique
- Helvetica-Narrow, Helvetica-Narrow-Bold, Helvetica-Narrow-Oblique, Helvetica-Narrow-BoldOblique
- NewCenturySchlbk-Roman, NewCenturySchlbk-Bold, NewCenturySchlbk-Italic, NewCenturySchlbk-BoldItalic
- Palatino-Roman, Palatino-Italic, Palatino-Bold, Palatino-BoldItalic

- 
- Symbol
  - Times-Roman, Times-Italic, Times-Bold, Times-BoldItalic
  - ZapfChancery-MediumItalic, ZapfDingbats

## Using Downloadable Fonts

Downloadable PostScript fonts, including Adobe Type 1 encrypted typefaces, may be used with the PostScript interpreter. Other PostScript fonts that you can use with the interpreter are generally referred to as *Type 3* fonts. Non-PostScript fonts, such as those used by the Hewlett-Packard LaserJet, cannot be used.

Downloadable fonts are not installed directly into the PostScript interpreter, they are sent to the PostScript interpreter as part of the PostScript file to be imported. Therefore, you (or your application) must include the downloadable font descriptions as part of the file imported to IsoFax.

---

**Note:** The downloadable fonts cannot be sent as a separate file. Font descriptions and page descriptions must be in the same file.

## Adding New PostScript Fonts

You can add PostScript fonts to the interpreter so that they are always available (that is, you don't have to download them with the fax).

To add a new font:

1. Determine the exact name of the font, which is totally unrelated to the name of the file containing the font description.
2. Edit the file *Fontmap* in the directory *ps\_interp* (a subdirectory of the main IsoFax directory), and at the end of the file, add a line in the following format:

```
/My_font_name      (my_file_name);
```

---

**Note:** You must include the trailing semicolon.

**Example:**

## Error Messages

The error messages generated by the interpreter are listed and defined in the table below. These are standard PostScript interpreter messages. The numbers enclosed in brackets refer to the page numbers in the 1986 edition of that manual containing full details on the error message.

Error Message	Number	Meaning
dictfull	158	No space is available in the dictionary to store a new entry.
dictstackoverflow	157	The dictionary stack has reached its upper limit.
dictstackunderflow	157	The dictionary stack has no more entries to remove.
execstackoverflow	163	The execution stack has reached its upper limit.
invalidaccess	185	Access to a file, array, dictionary, or string object violates its access attribute setting.
invalidexit	186	An exit has been improperly executed or attempted without a looping operator.
invalidfileaccess	186	An unacceptable access string has been specified to a file operator.
invalidfont	186	An invalid font name or dictionary has been specified.

---

Error Message	Number	Meaning
<code>invalidrestore</code>	186	An invalid restore operation has been attempted which would corrupt one or more of the dictionary operands or execution stacks.
<code>ioerror</code>	187	Some type of I/O error (such as Parity, Checksum, CRC, or protection violation) occurred during an I/O operation.
<code>limitcheck</code>	191	One or more PostScript implementation limits have been exceeded.
<code>nocurrentpoint</code>	199	An empty path has been specified.
<code>rangecheck</code>	209	A numeric operand's value exceeds its expected range.
<code>stackoverflow</code>	238	The operand stack limit size has been exceeded.
<code>stackunderflow</code>	240	An unsuccessful attempt has been made to pop an object operand from an empty operand stack.
<code>syntaxerror</code>	246	A syntax error has been detected in a PostScript file.
<code>timeout</code>	247	A set time limit for an event has been exceeded.
<code>typecheck</code>	251	An operand's type does not agree with what an operator expects.
<code>undefined</code>	252	An undefined dictionary key has been specified.

---

Error Message	Number	Meaning
undefinedfilename	252	A specified file cannot be found or opened.
undefinedresult	252	A mathematical operation produced a meaningless result or one that exceeds PostScript's numerical limits.
unmatchedmark	252	An expected mark was not found on the stack.
unregistered	253	An operator object for which there is no built-in action has been executed.
VMerror	254	Virtual memory resources have been exhausted. This may occur due to lack of disk space or memory.

---

**Note:** For more detailed descriptions, consult the *PostScript Language Reference Manual* ("Red Book") by Adobe Systems, Inc., published by Addison-Wesley Publishing Co.

# B

## TROUBLESHOOTING

---

This appendix provides solutions to common problems you may encounter with IsoFax. It describes trace files, a mechanism for tracking server activity and providing diagnostic messages, and explains specific error messages with possible courses of action.

Please consult this appendix before calling The Bristol Group for technical assistance.

---

## Trace Files

Often the best way to troubleshoot a problem is to see the internal workings of various programs such as *faxd* and *fax\_deliver*. IsoFax provides this capability with trace files, files into which these programs write debugging or progress messages. You can capture individual trace messages for each device or process by creating a file named *TRACES*. A sample *TRACES* file named *TRACES.proto* is contained in the distribution.

---

**Note:** Previous methods of turning traces on or off using the `FAXTRACE` environment variable and the `USR1` signal are no longer supported.

As shown in the following sample, the *TRACES* file contains four columns.

<i>faxd</i>	ON	<i>stderr</i>	Overwrite
<i>ttyz00</i>	ON	-	Append
<i>ttyz01</i>	ON	-	Append
<i>ttyz02</i>	ON	-	Append
<i>ttyz06</i>	ON	-	Append

- The first column shows the name of the program or device for which tracing is desired. Possible entries are as follows:
  - *faxd* (for queue 1; for other queues, the number is added; for example, *faxd3* specifies queue 3)
  - *faxit*
  - *faxdid*
  - a serial port name such as *ttya* and *ttyz00* (for *fax\_deliver* tracing)
  - *faxinboxd*
  - *faxinfod*
- The second column contains the words *ON* or *OFF* indicating the status of tracing. An empty column or one with a - assumes the default (*ON*).

- 
- The third column contains a filename for the trace output. The standard devices *stdout*, *stderr* may also be used. If this field is empty or contains a *-*, a default filename is formed: *work/trace\_(process\_identifier)*, where *work* is the default work directory or the work directory given in an optional configuration file. For example:

```
./work/trace_faxd  
./work/trace_ttyz00
```

(Note: If the device name contained slashes or backslashes, these will be converted to underscores.) You can dynamically change the names of the trace files by editing the *TRACES* file. If you do this, the server automatically closes the old file and reopens a new file with the new name.

- The fourth column contains the overwrite/append switch. Any word beginning with the letter *o* means to *overwrite* the existing trace file; anything else (including empty or *-*) means *append* to the existing trace file.

The search path for *TRACES* is as follows:

```
$ISOFAXHOME  
EXECUTABLES directory (from FAX_SERVER_CONF)  
The current directory
```

Turn off tracing when you no longer need it for troubleshooting since trace files rapidly consume large amounts of disk space.

---

## Error Messages

This section explains common error messages that may in one of the following locations:

- The shell window where the application was launched
- The console window
- An error dialog box in the application itself
- (NT only) A server error log called *isoserv.log*.

### blserver

```
Couldn't find any license files
```

*blserver* could not locate a *bristol\_licenses* file in either BLSERVERHOME, ISOFAXHOME, or in the current directory.

#### *Solutions*

- If you have not created a license yet, use the *license\_tool* program to enter the license you received from The Bristol Group.
- Set the environment variable BLSERVERHOME to the location of the *bristol\_licenses* file or start *blserver* from the directory where the *bristol\_licenses* file resides. (It is also possible to start *blserver* with the absolute path of the *bristol\_licenses* file.)

```
(FATAL) Bad or missing validation code
```

*Solution:* Edit or view (using *cat* (Unix) or *type* (NT)) the file *bristol\_licenses* and compare the contents to what you received from The Bristol Group. If the file is different re-enter the license information again using *license\_tool*. Contact the Bristol Group for further assistance.

```
(FATAL) License file not for this server
```

You are attempting to start *blserver* using a *bristol\_licenses* file for another *hostid*.

*Solution:* Edit or view (using *cat*) the file *bristol\_licenses* and compare the contents to what you received from The Bristol Group. If the file is different re-enter the license information again using *license\_tool*.

---

```
(FATAL) feature_name: Bad feature
```

You have an old style license file.

**Solution:** Please contact the Bristol Group for a new validation code.

```
*** BRISTOL LICENSE SERVER ABORTED !!!  
Another license server is already active.  
You must kill it before starting another...
```

*blserver* is currently running on your host.

**Solution:** Use the *ps* command to verify that *blserver* is running. If required, kill *blserver* and restart it.

## faxd

```
faxd: License server 'hostname' not responding
```

The license server, *blserver*, is not running on *hostname*.

**Solution:** Start *blserver* and then restart *faxd*.

```
FATAL ERROR: couldn't create directory './work'
```

This error indicates a permissions problem.

**Solution:** Verify that the directory structure for the specified directory exists and that the permissions allow *faxd* to write to it.

```
WARNING! Couldn't make a directory
```

This error indicates a permissions problem.

**Solution:** Verify that the directory structure for the *work* and/or *incoming* directories exists and that the permissions allow *faxd* to write to it.

```
FATAL ERROR:faxit is already running for queue number 1
```

**Solution:** Kill *faxit* and *faxd* (if running) and restart *faxd*.

---

```
Couldn't find feature voice_x
```

You need to upgrade to a newer *blserver*.

**Solution:** Please contact The Bristol Group.

```
Problem with modem on '' (fatal) !
```

**Solution:** Check the modem declaration in the *MODEMS.info* file, */etc/ttytab* (SunOS only), or possibly *FAX\_SERVER\_CONF.info*. Use *tip*, *cu* or *kermit* to verify the connection to the modem.

```
ttya Unknown SEND/REC DOWN: MODEM NO RESPONSE pid=0
```

**Solution:** Use *tip*, *cu* or *kermit* to verify the connection to the modem. Restart *faxd* using the *TRACES* file to troubleshoot the modem problem.

## Fax Toolkit

```
Internal error: can't continue (code = 11)
```

**Solution:** Contact The Bristol Group.

```
No license server active on <hostname>.
```

If you are executing a command on the license server host, then *blserver* is not running.

**Solution:** You must restart *blserver*. If you are executing on a client, then you must specify where *blserver* resides.

---

## Remote Procedure Registration

"Unable to register" (*some program*) or "Attempt to unset" (*some program*) or "RPC: Program not registered" or "RPC: Remote system error - Connection refused"

There are many possible causes for this type of message. By far the most common is that the license server (*blserver*) or fax server (*faxd*) was once started by root (super-user), either explicitly or implicitly (at boot time), and you are now trying to start it as a non-root user.

### *Solution*

For SunOS           % ps ax | grep blserver

For Solaris 2.x     % ps -ef | grep blserver

For Windows NT    C:\> grim\_process\_reaper -e blserver

If a *blserver* is running, your output should resemble the following:

```
5938  p0  S      0:00 grep blserver
2375  p2  I      0:00 blserver
```

The actual *blserver* process in this case is process number 2375. Kill it with the following command:

Unix: # kill -9 2375

NT: C:\> grim\_process\_reaper -I 2375

Now find the fax server process (*faxd* and its associated process):

For SunOS           # ps ax | grep faxd

For Solaris 2x     # ps -ef | grep faxd

If the fax server is running, the output appear as follows:

```
5942  p0  S      0:00 grep fax
2377  p2  S      0:00 ./faxd FAX_SERVER_CONF
2378  p2  IW     0:00 ./faxit FAX_SERVER_CONF
2379  p2  S      0:03 ./fax_deliver
```

Kill the relevant processes, including *faxd*, *faxit*, and sometimes *fax\_deliver*. To kill these, you need only kill *faxd* with the following command (without the *-9* switch), and it will kill the children automatically:

---

```
# kill 2377
```

Using the *ps* command above, verify that the license server and all fax server processes are gone. You can then proceed to delete the RPC ports. To list these ports, use the following command:

```
# rpcinfo -p
```

If the command results in the following message

```
rpcinfo: can't contact portmapper
```

the system port mapper has failed for some reason and you need to reboot your machine. If *portmap* still has not started, check to see if it is commented out in the *rc* boot script. Otherwise, the output should resemble the following lines:

```
100000      2   tcp    111
100000      2   udp    111
100001      3   tcp    111
100001      3   udp    111
100002      4   tcp    111
100002      4   udp    111
100003      2   tcp    32798
100003      3   udp    32798
660928154   1   udp    726
660928154   1   tcp    728
660993691   1   udp    738
660993691   1   tcp    740
660928412   1   udp    739
660928412   1   tcp    741
```

---

**Note:** On IBM AIX, the manual method of starting *portmap* is with the command *startsrc -s portmap*

A script named *delete\_ports* is provided with Unix IsoFax distributions. Simply run this script, as shown here, to delete all the ports:

```
# delete_ports
```

---

The script can be viewed and edited, if necessary. For reference, the contents of the script *delete\_ports* is listed below:

```
rpcinfo -d 660928411 1
rpcinfo -d 660928412 1
..... etc .....
```

Each of these lines is a command to delete two ports, a *tcp* port and a *udp* port with the same number.

If, after completing this procedure, an RPC error message appears when you start up the license server or fax server, you should reboot your machine to reset the entire system. If your system is set up to start these servers automatically at boot time, you should disable the boot-time start up until the cause of your problem is isolated. Remember that until the installation of the IsoFax servers on your system is completely stable and reliable, starting servers at boot time can cause a lot of problems.

## Console Window (Unix only)

```
Couldn't open console window
```

This message indicates that you do not have permission to write to the console window. Although this problem is usually not serious, you should correct it.

*Solution:* Type in the following command. (You may need to be root to change permissions). If in doubt, contact your system administrator.

```
# chmod 666 /dev/console
```

## File Access

```
Couldn't open, read, find, or write (some file)
```

*Solution:* First, check to see if the file exists at the specified location. If it does, check permissions for the file itself as well as for the directory containing the file.

You can view a list of file permissions with the command:

```
% ls -lag file_name
```

---

You can view a list of directory permissions with the command:

```
% ls -ld directory_name
```

Check carefully to see exactly where the software is trying to access the file. Many factors, including the `BLSERVERHOME` environment variable, can affect the location of files.

If a file does not exist yet and the software cannot open it, the cause is usually a permission problem on the directory where the software is trying to create the file.

Always check to make sure that the environment variables `BLSERVERHOME` and `ISOFAXHOME` are set. Automatic login processes may set it without your being aware of it. To check the value of the environment variable, type the following commands:

```
% printenv BLSERVERHOME
```

```
% printenv ISOFAXHOME
```

## Testing the Modem

With the modem powered on, you should be able to communicate with the modem using the `tip` or `cu` utility. ***Do not attempt to test the modem until you have turned off logins.***

---

**Important:** Sun users, do not issue the `tip` command from a `cmdtool` window, only from a `shelltool` window.

To test the type one of the following commands, substituting a the actual device name for `/dev/ttya` or `com2`.

```
% tip -19200 /dev/ttya (Unix)
```

```
% cu -s 19200 -l /dev/ttya (Unix)
```

```
% cu -d com2 -b 19200 (Windows NT)
```

After you receive the `CONNECTED` or similar response, type `AT` and press Return. The modem should respond with `OK`. If not, there is a cabling problem, or more likely, port configuration problem.

---

## Determining IsoFax Support for a Modem

Modems must be compatible with the EIA 592 standard. Such modems are commonly referred to as Class-2 modems. Class-1 modems are not acceptable. First, you must make certain that your modem is a Class-2 modem.

To verify the class of the modem:

1. On the fax server machine, connect to the modem, and use one of these sequences:

If you have...	Use this sequence...
kermit	<pre># kermit C-Kermit&gt;set line /dev/xyzmodem C-Kermit&gt;set speed 9600 C-Kermit&gt;connect</pre>
tip	<pre>tip -19200 /dev/xyzmodem</pre>
cu	<pre>cu -s 19200 -l /dev/xyzmodem</pre>

2. To determine the class, issue the following command:

```
AT+FCLASS=?
```

The modem responds with a list of supported classes. If you do not see a 2 or 2.0, which refers to Class-2, then the modem is not a Class-2 and is not supported.

3. To determine the manufacturer, issue the following command:

```
AT+FMFR?
```

The modem responds with the manufacturer's identification string.

4. To determine the firmware revision, issue the following command:

```
AT+FREV?
```

The modem responds with the manufacturer's revision information.

- 
5. To disconnect from this modem using *kermit*, issue the *kermit* escape string:

```
CONTROL '\ ' c
```

6. To quit *kermit*, *cu*, or *tip*:

```
C-Kermit>quit      (for kermit)
```

```
~.                (for cu or tip)
```

If the output from the *FMFR* command is ZyXEL or ROCKWELL then the modem is supported by IsoFax. If the output is not ZyXEL or ROCKWELL, you may force the fax server to treat it as a ZyXEL by adding the following entry in the modem declaration in the *MODEMS.info* file:

```
modem_type = rockwell
```

## Including PostScript Documents in Fax

see <code>psi_out</code> for details.
---------------------------------------

The usual cause of this message is not enough disk space in */tmp* (root). IsoFax uses */tmp* for temporary files.

**Solution:** Create more free disk space by removing files from */tmp* and try again.

---

## Problems with Microsoft Word PostScript Files

Users have reported problems with PostScript files produced by Microsoft Word and Excel. We have verified these problems using the Apple LaserWriter II NTX printer driver with Microsoft Word for Windows 6.0, but the same problems probably exist in other versions of Word and Excel and with other Windows PostScript printer drivers.

PostScript cover sheet files created by Microsoft Word cause one or both of the following problems:

- Failure of the PostScript interpreter due to “divide by zero” check.
- Merged-in text is garbled (too closely spaced). These problems occur because Microsoft Word does not use the PostScript *show* operator for displaying text strings. Instead, it uses a custom procedure that places characters one at a time. This method is incompatible with Bristol’s datamerge technique. To work around this problem, edit the print file for the PostScript cover sheet template, and insert the following line

```
/SB { pop 4 1 roll pop moveto show } def
```

just before the line

```
%%EndSetup
```

This line redefines the *SB* procedure to use the *show* operator as expected by IsoFax.

# C

## BRISTOL FILE FORMATS

---

The format of IsoFax-created fax files is open to allow for customer extensions to IsoFax software. All attempts will be made to maintain compatibility in future releases. This appendix contains the formats for:

- The Bristol fax file
- The phone book
- The distribution list

---

## The Bristol Fax File Format

Throughout this manual, we have referred to this format as the Bristol fax file format. The file format is as follows:

- Each fax file begins with a 4-byte number identifying the file as a Bristol fax file.
- This identifier is followed by an ASCII header consisting of 4 bytes.
- The header is followed by a varying number of keyword/value couples. Each value is separated from the keyword by a colon (:) and is terminated by a newline character (ASCII 12). The table in this section provides a list of currently defined keywords.

---

**Note:** Since keywords will be added in later releases, software should be written to ignore unknown keywords so that, at most, a warning is issued.

- A GS character (ASCII 29) announces the beginning of binary image data. The binary data consists of a series of zero or more fax page descriptions.

---

The following listing presents the Bristol fax file format in C-like form:

```
struct keyword_entry
{
    char keyword[];
    char separator = ':';
    char value[];
    char terminator = '\n';
};

struct page
{
    long pagesize; /* page data size in bytes */
    bytes compressed_image[]; /* pagesize bytes long */
};

struct fax_file
{
    long magic_number = 0xbadbad16;
    long header_length; /* total bytes next two items */
    struct keyword_entry[]; /* 0 or more keyword entries */
    char header_end = '\035'; /* indicates end of header */
    struct page[]; /* 0 or more pages */
};
```

---

**Note:** The compressed image data should be considered atomic (not parsable).

---

The following table provides a description and values for fax file header keywords.

Keyword	Description and Values
#PAGES:	Number of pages in fax, including the cover sheet.
COMPRESSION:	The type of compression used: 0 = MH, 1-D Group 3 1 = MR, 2-D Group 3 2 = Uncompressed, 2-D Group 3 3 = MMR, 2-Dimensional Group 4 If this keyword is not present, a value of 0 is assumed.
DATE:	Date of creation of the fax.
FAX_ID:	Arbitrary ID number. Refer to <i>enfax's -i</i> switch.
FOLDERS:	Obsolete keyword giving a list of the folders to which this fax belongs. Note that in earlier versions of IsoFax folders were implemented as logical entities. Currently they are implemented as physical directories.
INCOMING:	0 = Outgoing fax 1 = Incoming fax
RECEIVER_ADDRESS:	For cover sheet
RECEIVER_DEPARTMENT:	For cover sheet
RECEIVER_EMAIL_ADDRESS:	For cover sheet
RECEIVER_FAX#:	For cover sheet
RECEIVER_MAILSTOP:	For cover sheet
RECEIVER_NAME:	For cover sheet
RECEIVER_ORGANIZATION:	For cover sheet

---

Keyword	Description and Values
RECEIVER_SECONDARY_FAX#:	For cover sheet
RECEIVER_VOICE#:	For cover sheet
RESOLUTION:	0 = 98 x 204 1 = 196 x 204
SALUTATION:	For cover sheet
SENDER_ADDRESS:	For cover sheet
SENDER_DEPARTMENT:	For cover sheet
SENDER_EMAIL_ADDRESS:	For cover sheet
SENDER_EQUIPMENT:	For cover sheet
SENDER_FAX#:	For cover sheet
SENDER_MAILSTOP:	For cover sheet
SENDER_NAME:	For cover sheet
SENDER_ORGANIZATION:	For cover sheet
SENDER_SECONDARY_FAX#:	For cover sheet
SENDER_VOICE#:	For cover sheet
SERVER_COVER	For internal use
SUBJECT:	For cover sheet
WIDTH:	Image width in pels. Valid values are: 864 1216 1728 (value if keyword is absent) 2048 2432
INCLUDE:	For internal use
INCLUDE_PAGES:	For internal use

---

Keyword	Description and Values
KEYWORDS:	For internal use
RECEIVE_START_TIME:	For internal use
RECEIVE_END_TIME:	For internal use
RECEIVE_START_TIME:	For internal use
VIRGIN:	For internal use

---

## Phone Book Format

An IsoFax phone book contains phone numbers of recipients and additional information about them. A DOS/Windows phone book has the extension *.PH*. No extension is used for Unix IsoFax phone book files.

---

## Format

A phone book record consists of 12 fields that are: position-dependent, colon-separated, variable-length (possibly empty) ASCII fields, and terminated by a Carriage Return, Linefeed, or both.

The fields, which must appear in the order shown, are provided in the following table.

Order	Field	Description
1	Name	The recipient's name, in first name, last name order.
2	Department	Department name
3	Company	Company name
4	Fax number	Primary fax number (used by the fax server)
5	Fax number	Secondary fax number (not used)
6	Email	Email address
7	Voice phone	Voice phone number
8	Mail stop	Company mail stop
9	Address (1)	Street address Note that IsoFax WinClient uses the <i>Address 1</i> field for the entire address.
10	Address (2)	City, state, and postal code
11	Record #	A record number $\geq 1$ , which must be unique to this file
12	Salutation	How the person is addressed; for example, "Dear"

---

---

## Lexical Rules

- Missing fields require a colon place holder.
- Colons in fields must be escaped with a preceding backslash; for example:

```
Tom Smith:Engineering\ :R&D:XYZ Corp: etc...
```

## Examples

Records in the following examples may be broken into several lines for clarity; in reality, the only newline allowed is the one that terminates the record (which is shown as <LF>).

```
Sophie North:(principal):Aussies Unlimited:510-223-0909::sophien@aul.com:510-223-0905::RFD #4, Pinole, CA 90117::5:<LF>
Betty Wont:::925-4141:::10:<LF>
M. Reynard::Foxes Incorporated:925-9262:::6:<LF>
```

## Distribution List Format

For every phone file, there may be a distribution list of the same name with a different extension. The extension for DOS/Windows is *.DST* and *.dlists* for Unix.

A distribution list contains records consisting of two fields:

- The name of the distribution list, which is terminated with a Carriage Return, Linefeed, or both.
- A list (possibly empty) of record numbers from the corresponding phone book identifying members of the distribution list. The record numbers are separated by spaces and terminated by a linefeed.

## Example Distribution List File

The example below illustrates three distribution lists, along with their members:

```
Immediate Family
3 4
Business
2 5 4
Personal
10 7 3 11 4 8
```

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