ESKER VSI-FAX®

Installation and Administration Guide

Esker® SOFTWARE

VSI-FAX Version 4.2.2 Issued July 2003
VSI-FAX for Notes Version 3.6.1 Issued July 2003

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Preface

VSI-FAX uses a robust central fax engine that runs on Windows 2000/NT, Unix, and Linux network hosts. This powerful TCP/IP-based fax server delivers consistent, reliable performance for all your fax-enabled applications and desktop fax users.

Note: Always check the online Release Notes for supplemental updates to this printed VSI-FAX Installation and Administration Guide. The Release Notes may include updated installation and feature information not contained in this guide. In addition, the online version of this manual may be more up-to-date than the printed version.

Scope and intended audience

This manual provides detailed instructions for installing the VSI-FAX network fax server on supported Windows, Unix, and Linux platforms. It also provides detailed instructions for installing and configuring the VSI Outlook and web fax clients.

Esker expects that persons installing a network fax server have a working knowledge of their platform and operating system. You should know how to:

- Edit text files
- Install and configure TCP/IP
- Configure hardware devices
- Set up new users

Installation of this software acknowledges you have read and agreed to the terms of the VSI-FAX Software License Agreement. Any questions regarding the legal use of this software can be answered by calling Esker at (608) 273-6000. For the latest Esker product and support information, visit our web site at http://www.esker.com.

Technical support and warranty

Esker is committed to providing the best in professional support and services and offers a range of extended support and upgrade plans to meet the diverse needs of our customers. To obtain technical support, your VSI-FAX system must be covered under an Esker Pro™ Maintenance and Support Plan from Esker.

North and South America

For detailed information, or assistance in choosing an Esker Pro plan, contact VSI-FAX Sales at:

- Toll Free (800) 556-4874
- Fax (949) 462-3399

VSI-FAX Technical Support is available during normal office hours, 8:00 am. to 5:00 pm. PST, via:

- Telephone (949) 462-2200
- Fax (949) 462-3300
- Email vsi-faxsupport@esker.com

On subscribing to a software support and upgrade plan for your VSI-FAX Server(s), additional technical support access guidelines will be provided.

VSI-FAX comes with an initial 30-day limited warranty that becomes effective on the date of registration. You must register the product in order to receive your serial numbers and activation keys (required for product installation) and to receive free technical support for the initial 30 day period.

For all other customers, Monday through Friday

Australia: 8:30 a.m. to 5:30 p.m.
Tel: +61 2 9565 5688, Fax: +61 2 9565 5877

France: 9:00 a.m. to 12:00 p.m. and 2:00 p.m. to 5:30 p.m.
Tel +33 (0)4.72.83.46.46, Fax +33 (0)4.72.83.46.40

Germany: 9:00 a.m. to 5:00 p.m.
Tel: +49 201 821 57-0

Italy: 9:00 a.m. to 6:00 p.m.
Tel: +39.02.89.20.03.03

Spain: 9:00 a.m. to 7:00 p.m.
Tel: +34.91.552.92.65

UK: 9:00 a.m. to 5:30 p.m.
Tel: +44 1332 799622

Upgrades

Note: You can only directly upgrade to VSI-FAX 4.2.x from VSI-FAX Gold Series (3.x). You cannot directly upgrade your fax server or clients from earlier versions of VSI-FAX. Furthermore, upgrades are only offered to customers covered by a current VSI maintenance agreement.

If you are upgrading your fax server and fax clients, we strongly recommend that you review the *VSI-FAX Upgrade Guide* before installing any VSI-FAX product. The manual can be found on the VSI-FAX CD-ROM in the `/docs` directory or from the CD Browser.

Getting help

A complete set of online documentation is available on your VSI-FAX product CD-ROM. Point your web browser to `<cd_rom>/docs/index.html`.

A word about Unix, Linux and Windows notation

This manual supports Unix, Linux, and Windows platforms. Whenever possible, meaningful examples are provided in all applicable formats. However, in the interest of clarity, directories and filenames are usually given in only one format. In most cases, these are interchangeable between platforms if you remember the following:

- Unix and Linux environment variables are prefixed with a dollar sign `($)`; Windows environment variables are enclosed in percent signs `(%)`.

- Unix and Linux path statements use forward slashes `(/)`; Windows path statements use backlashes `(\)`.
- The following path statements are equivalent:

`$VSIFAX/MY_DIR/my_file`	Unix and Linux
`%VSIFAX%\MY_DIR\my_file`	Windows

Supported platforms and equipment

This chapter provides detailed technical information about:

- Supported platforms and detailed system requirements for each VSI-FAX application (e.g., fax server, clients, development tools)
- Supported fax devices (i.e., modems and fax boards)
- Support for Windows Terminal Server environments
- Support for other equipment (e.g., Ethernet Terminal Servers, Port Expanders, etc.)

Note: The information in this chapter was correct at publication time. However, you can always access the latest supported platforms and equipment information in the support area of the Esker web site at http://www.esker.com.

What is a platform?

A platform is a specific combination of operating system and Central Processing Unit (CPU). Many commercial operating systems run on both Intel and RISC CPUs. VSI-FAX does not always support all of these combinations. In order to avoid confusion, this manual routinely specifies entire supported platforms (i.e., operating system and CPU) rather than just a supported operating system.

VSI-FAX server

These are the detailed system requirements for installing and using a VSI-FAX server.

Supported Platforms	Operating System Version(s)
Caldera Systems Open Linux	3.1, 2.4, 2.3, 2.2.5, 2.2
Caldera Systems Open UNIX	8
Compaq Tru64 Unix (Alpha)	5.1, 4.0E
Data General AViiON DG/UX (Intel)	4.20
Hewlett-Packard HP-UX	11.0, 10.20
IBM AIX (RS6000)	5L, 4.3.3, 4.3.2, 4.1.5
IBM AIX (PowerPC)	4.3.3, 4.3.2
Microsoft Windows NT	4.0 Server or Workstation (Service Pack 4 required; Service Pack 5, 6 or 6a optional).
Microsoft Windows 2000	Professional, Server, Advanced Server (Service Pack 1 or 2 optional).
NCR SVR4 MP-RAS	3.0.2.01
Red Hat Linux	8, 7.2, 7.3, 7.1, 7.0, 6.2, 6.1, 6.0
SCO OpenServer 5 Enterprise	5.0.6, 5.0.5
SCO UnixWare	7.1.1
Sun Solaris (Intel)	9, 8, 7
Sun Solaris (SPARC)	9, 8, 7, 2.6, 2.4

Note: Red Hat Linux 8 does not support Brooktrout TR1034 boards.

Hardware Requirements	Required Minimum	Recommended
CPU	Pentium II 300 MHz or comparable RISC processor appropriate to your operating system.	Pentium III 450 MHz or comparable RISC processor appropriate to your operating system.
RAM	128 MB	256 MB
Hard Disk Space	100 MB permanent disk space plus 100 MB additional temporary space required during installation.	500 MB
Network Interface Card	10baseT or higher, configured with latest drivers for your platform.	N/A

Software Requirements	Required Minimum	Recommended
TCP/IP Connectivity	As provided by your platform.	N/A

MMC Fax server administration

These are the detailed system requirements for installing and using the VSI MMC Fax Server Administration application.

Supported Platforms	Operating System Version(s)
Microsoft Windows NT	Workstation and Server 4.0 (Service Pack 4 required; Service pack 5, 6 or 6a optional).
Microsoft Windows 2000	Professional, Server, Advanced Server (Service Pack 1 or 2 optional).

Hardware Requirements	Required Minimum	Recommended
CPU	Pentium II 300 MHz	Pentium III 450 MHz or higher
RAM	64 MB	128 MB
Hard Disk Space	Cell 5 MB permanent disk space plus 10 MB additional temporary space required during installation.	N/A
Network Interface Card	10baseT or higher, configured with latest drivers for your platform.	N/A

Software Requirements	Required Minimum	Recommended
TCP/IP Connectivity	As provided by your platform.	N/A
VSI-FAX Server[1]	4.0.2	4.1.1
MS Internet Explorer[2]	5.0	5.5 or 6.0
Microsoft Management Console (MMC)	1.1, 1.2	1.2

Notes: Any VSI-FAX Servers you want to remotely administer must be properly installed, configured, and accessible via a network connection.

Outlook Fax Client

These are the detailed system requirements for installing and using the VSI Outlook Fax Client.

Supported Platforms	Operating System Version(s)
MS Windows	ME, 98, 95
MS Windows NT	Workstation and Server 4.0 (Service Pack 4 required; Service pack 5, 6 or 6a optional).
MS Windows 2000	Professional, Server, Advanced Server (Service Pack 1 optional).

Hardware Requirements	Required Minimum	Recommended
CPU	Pentium 100 MHz	Pentium II 266 MHz or higher
RAM	32 MB	64 - 128 MB
Hard Disk Space	10 MB permanent disk space plus 8 MB additional temporary space required during installation.	N/A
Network Interface Card	10baseT or higher, configured with latest drivers for your platform.	N/A

Software Requirements	Required Minimum	Recommended
TCP/IP Connectivity	As provided by your platform.	N/A
VSI-FAX Server[1]	4.0.2	4.1
Microsoft Outlook[2]	97, 98, 2000	98 or 2000

[1] A VSI-FAX Server must be properly installed, configured, and accessible via a network connection

[2] The VSI Outlook Fax Client is best used with Outlook in Corporate or Workgroup mode in conjunction with a Microsoft Exchange Server. This configuration provides access to the fax message form published on the Microsoft Exchange Server.

While you can use the VSI Outlook Fax Client with Outlook in standalone Internet e-mail only mode, you will have to manually enter your fax recipient information using MAPI syntax each time you send a fax.

⏩ Refer to the Outlook Fax Client online help for additional information about various ways to send faxes using the VSI Outlook Fax Client.

VSI Windows Client

The computer you're installing the VSI Windows Client on needs to meet the following requirements:

Supported Platforms	Operating System Version(s)
MS Windows	ME, 98, 95
MS Windows NT	Workstation and Server 4.0 (Service Pack 4 required; Service pack 5, 6 or 6a optional).
MS Windows 2000	Professional, Server, Advanced Server (Service Pack 1 optional).

Hardware Requirements	Required Minimum
Hard Disk Space	5 MB
Network Interface Card	10baseT or higher, configured with latest drivers for your platform.

Software Requirements	Recommended
HTTP connectivity	As provided by your platform to provide connectivity to the VSI-FAX Server.
VSI-FAX Server	4.2.2
Internet Explorer	5.5 or greater

The VSI Windows Client is an easy-to-use front end to the VSI Fax server. It is designed to provide an easy way for desktop users to use VSI-FAX. The

Windows client allows users to send faxes, view sent faxes through an Outbox, and view received faxes through an Inbox.

Using the VSI Windows Client, you can send faxes using either of two methods:

- Send a fax from an application that allows you to print
- Send a fax directly from the Windows client

▶▶ See the *VSI Windows Client* online documentation for more information on installing and using the Windows Client.

CoverMaker

These are the detailed system requirements for installing and using VSI CoverMaker.

Supported Platforms	Operating System Version(s)
Microsoft Windows	ME, 98, 95
Microsoft Windows NT	Workstation and Server 4.0 (Service Pack 4 required; Service pack 5, 6 or 6a optional).
Microsoft Windows 2000	Professional, Server, Advanced Server (Service Pack 1 optional).

Hardware Requirements	Required Minimum	Recommended
CPU	Pentium 100 MHz	Pentium II 266 MHz or higher
RAM	16 MB	32 - 128 MB
Hard Disk Space	3 MB	N/A
Network Interface Card [1]	10baseT or higher, configured with latest drivers for your platform.	N/A

Software Requirements	Required Minimum	Recommended
TCP/IP Connectivity[1]	As provided by your platform.	N/A
VSI-FAX Server[1]	4.0.2	4.1.1

[1] A properly installed and configured VSI-FAX Server must be accessible via a network connection in order to save your fax cover pages on the fax server so that they can be used for faxing. However, you can use CoverMaker on a standalone (i.e., non-networked) computer while designing your cover pages.

Software Development Kit (SDK)

These are the detailed system requirements for installing and using VSI Software Development Kit (SDK).

Supported Platforms	Operating System Version(s)
Microsoft Windows	ME, 98, 95
Microsoft Windows NT	Workstation and Server 4.0 (Service Pack 4 required; Service pack 5, 6 or 6a optional)
Microsoft Windows 2000	Professional, Server, or Advanced Server (Service Pack 1 optional)

Hardware Requirements	Required Minimum	Recommended
CPU	Pentium 100 MHz	Pentium II 266 MHz or higher
RAM	32 MB	64 - 128 MB
Hard Disk Space	43 MB	50 MB
Network Interface Card [1]	N/A	10baseT or higher, configured with latest drivers for your platform

Software Requirements	Required Minimum	Recommended
TCP/IP Connectivity[1]	N/A	As provided by your platform
VSI-FAX Server[1]	N/A	4.0.2 or higher
Development Environment	Microsoft Visual Basic 6.0 or Visual C++ 6.0	N/A

[1] Connection to a VSI-FAX Server is not required but is useful for testing and debugging your applications.

Windows Terminal Server support

The Outlook Client fully supports the following Microsoft Windows Terminal Server environments.

- Microsoft Windows NT Server, Terminal Server Edition, Version 4.0 (with Service Pack 3 or higher)
- Microsoft Windows 2000 Server or Advanced Server with Terminal Services enabled

Citrix MetaFrame

VSI-FAX also supports the Citrix MetaFrame enhancement for the Windows NT 4.0 and Windows 2000 platforms.

Note: The Outlook Client is not supported on Windows NT 3.5.1. Therefore, Citrix WinFrame, which only runs on Windows NT 3.5.1, is also not supported.

Note: Before deploying VSI-FAX in a Windows Terminal Server environment, read this article in the Microsoft Knowledge Base:
http://www.microsoft.com/office/ork/2000/two/30t3_2.htm
It contains valuable information about setting up and configuring your Microsoft Office 2000 applications for a Windows Terminal Server environment.

Requirements

To successfully install the Outlook client in a Terminal Server environment, you must:

- Log in and run the installation program directly from the Terminal Server machine with local Administrator privileges.
- Ensure that each Terminal Server user has a unique path name defined for the Terminal Server Home Directory.
- Launch the fax client installation program in Install Mode.
- Install Outlook 97, 98 or 2000 in Corporate or Workgroup configuration (if using Outlook 98/2000).
- Ensure that no Terminal Server clients are running Outlook.

If your Outlook users connect to an Exchange Server, add the Exchange service to the default mail profile for the Administrator account and each Terminal Server client user.

If your Outlook users connect to an Exchange server using Outlook 98/2000 and you want to use the custom Fax Message Form, the Terminal Server Administrator must be granted publishing rights to the Exchange server Organizational Forms Library specified in the default mail profile.

Install mode

In a Microsoft Terminal Server environment, any application accessed by multiple users must be installed using a special install mode. Just inserting the CD-ROM into the drive and letting the autorun utility launch the installation program will not work. There are two ways to launch an installation program in install mode: Control Panel and Command line

Control panel

This is a general procedure for installing any application in a Windows Terminal Server environment from the Windows control panel.

1. Choose Start > Settings > Control Panel > Add/Remove Programs. The Add/Remove Properties dialog box appears.
2. Click Install. This automatically places the system in install mode.
3. Follow the on screen instructions.

Command line

This is a general procedure for installing any application in a Windows Terminal Server environment from the command line.

1. Open a DOS Window.
2. Enter the following command and press Enter:
   `change user /install`
3. Load the application CD-ROM into your CD-ROM drive.
4. If the installation program does not start automatically, run `setup.exe` (typically located in the root directory of the application CD-ROM).
5. Install the application as you normally would in a non-Terminal Server environment.
6. Following successful installation, enter the following command and press Enter:
   `change user /execute`
7. Close the DOS window.

Supported fax devices and accessories

This section provides important information about the supported capabilities and limitations of fax boards, modems and accessories (e.g., port expanders, terminal servers).

Recommended fax boards and modems

In order to get maximum performance and reliability from your fax server, Esker recommends fax boards and modems from these manufacturers:

- Brooktrout Technology (www.brooktrout.com)
- Digi International (www.digi.com)
- Multi-Tech (www.multitech.com)
- Perle Systems, formerly Chase Research (www.perle.com)
- ZyXEL Communications (www.zyxel.com)

Note: The Esker web site always provides the most current fax device compatibility information. Point your browser to http://www.esker.com/support for additional information.

Brooktrout fax boards

Brooktrout TR114 and TruFax boards are only supported in the Windows 2000 and NT fax server platforms. However, Brooktrout TR1034 boards are supported in Windows, Solaris (Intel), Solaris (Sparc), Linux, and Unixware.

Brooktrout Technology provides detailed technical information about their fax boards on their web site at http://www.brooktrout.com.

This web site also presents excellent information about the advantages of fax boards over fax modems, the relative merits of analog and digital fax boards, and guidelines and recommendations for ordering various telephony services (e.g., T1, DID) for use with your networked fax solution.

⏩ For more information about using Brooktrout fax boards wtih VSI-FAX, see the *Brooktrout Fax Boards and Drivers* online manual.

Serial port expanders

The VSI-FAX class 2/2.0 fax interface module (C2 FIM) will work reliably with serial ports that provide full modem control. The following port expanders have been functionally tested with VSI-FAX. However, while the manu-

facturer may provide device drivers for various operating systems, not all operating systems have been tested by Esker.

Manufacturer	Model	OS Driver Support
Comtrol	RocketPort	Linux, NT, SCO
Computone	IntelliPort II EX	NT, SCO, UnixWare
Digi International (Central Data)	SCSI Terminal Server	AIX, Digital Unix, HP-UX, NT, SCO, Solaris
Digi International	AccelePort Xem	AIX, DG/UX, Digital Unix, HP-UX, Linux, NCR MPRAS, SCO, Solaris, Unixware
Equinox	SST-8P	Linux, NT, SCO, Solaris X86, UnixWare
Multi-Tech Systems	ISI552PC	Operating system independent
Multi-Tech Systems	ISI4608	Linux, NT, SCO
Stallion	EasyIO	NT, Linux, SCO, Solaris X86, UnixWare

Ethernet terminal servers

While some Esker customers have had success using Ethernet terminal servers, Esker does not recommend this practice nor do we support it in any way. Fax modems should always be connected to local serial ports. If you want to use more modems than can be connected to open serial ports on your system, use a local serial port expander.

Before you install

Esker strongly recommends that you prepare for product installation by reading this chapter **before** installing any VSI-FAX product.

Product registration

Prior to installing the server you must obtain a license serial number and activation key. If you install the server without a license, the server will only run in Demo mode. Go to http://www.esker.com and follow the links to the registration page. You will be given a serial number and activation key, which will be used during installation.

Fax server requirements

The target host machine must be a supported Windows NT/2000, Unix, or Linux platform.

⏩ Refer to “Supported platforms and equipment” on page 17 for a list of supported platforms and detailed system requirements.

TCP/IP must be running on the target host machine, and a network card must be installed.

At least one supported fax device (e.g., modem or fax board) must be installed and configured on the host machine. Point your web browser to http://www.esker.com/support for a list of supported fax modems and fax boards.

The machine you are installing from must have access to a local or networked CD-ROM drive, and, if necessary, you must know how to mount it.

You must have a multi-page TIFF viewer installed on your system in order to view faxes received on the server. For instance, Wang Imaging for Windows is provided on the Windows installation CD-ROM. Similar programs are available for Unix and Linux platforms.

Installation considerations

This section discusses various environment considerations and requirements necessary for a successful VSI-FAX installation. It is a very high level over-

view of these considerations. We strongly suggest that you read the additional information for each consideration if you have any uncertainty about your ability to fulfill these conditions during installation.

Supported platforms/system requirements

Verify that the machine you intend to use as a fax server is one of the platforms supported by VSI-FAX and that all of the hardware and third-party software required to run VSI-FAX is installed.

- Go to http://www.esker.com/support for system requirements and supported platforms.

Networking/TCP/IP

A functioning network card must be installed and configured for TCP/IP. Your system administrator should be able to determine if TCP/IP is properly configured.

- Refer to your operating system documentation for TCP/IP troubleshooting information.

Port 2996 and 2539 availability

VSI-FAX uses TCP ports 2996 and 2539 to communicate with the fax server. You must ensure that no other application or device is using these ports. You can check this by using the `netstat -an` command and checking the output for the presence of these port numbers.

- Refer to your operating system documentation for port assignment information.

Serial port assignments

VSI-FAX may communicate with your various fax devices (modems or fax boards) via serial ports on your system. You should know the name and physical location of the serial ports you are going to use to install your fax devices. Serial port names are usually found in the `/dev` directory on Unix and Linux systems and are named COM1 through COM9 in Windows.

- Go to the Knowledge Base at http://www.esker.com/support for detailed information about serial port compatibility.

CD-ROM

Because VSI-FAX is supplied on CD-ROM media, you must either know the Unix or Linux mount command required to mount the CD-ROM drive or know how to use Windows Explorer to gain access to the files on the CD-ROM.

Your system administrator knows how your CD drive has been mounted.

▶▶ See "Appendix D – Sample Unix and Linux Mount Commands" on page 241.

Modems and fax boards

The VSI-FAX supports most class 2 and class 2.0 modems. Esker also supports most TR114 Brooktrout fax boards on Windows NT/2000 and Brooktrout TR1034 on Windows, Solaris, Linux, and Unixware.

▶▶ Go to http://www.esker.com/support or refer to "Supported platforms and equipment" on page 17 for a current list of supported fax boards and modems.

Modem cabling

Using the proper modem cabling is critical because your modem will not operate properly if you use the wrong modem cable.

▶▶ Go to the Knowledge Base at http://www.esker.com/support for detailed information about modem cabling.

Dialing requirements/ dial codes

Your location may have specific dialing needs for local and long distance calls.

Annotated Fax Server Information Form

This server information form is annotated with detailed descriptions of the information required for a successful fax server installation. Esker strongly suggests that you print or photocopy the blank "Appendix E – Fax Server Information Form" on page 243, fill it out, and have it nearby when you install the fax server. Furthermore, if you require technical support to resolve

an installation problem, you may be asked to supply this information to our technical support staff.

Licensing information

Serial numbers and activation keys are required before beginning installation.

Refer to “Product registration” on page 31 for additional information.

Information	Description
Fax Server Serial Number	Fax server serial number. When client licenses are purchased as part of a fax server package, this is also the client serial number.
Fax Server Activation Key	Activation key for your fax server
Maintenance Activation Key	Activation key for your maintenance license

Cover page inforamtion

This company information appears on your fax cover pages.

Information	Description
Company Name	Your company name as you want it to appear on your cover pages
Address 1	First line of your company address
Address 2	Second line of your company address
Address 3	Third line of your company address. In the US, this is typically the city, state and zip code
Country	Your country as you want it to appear on your cover pages
Voice phone	Your voice telephone number as you want it to appear on your cover pages
FAX phone	Your fax telephone number as you want it to appear on your cover pages
Email	Your internet email address as you want it to appear on your cover pages

Dialing properties

This information is used to set up local dialing and station identification information. Some of this information appears on your sent fax headers.

Information	Description
Country Code	Your country code. This is used to dial international fax numbers. In the US, this is typically 1.
Long Distance Access #	Number you enter to dial long distance telephone numbers. In the US, this is typically 1.
Area Code	Your local telephone area code
Local Number Length	Number of digits in a local phone number. In the US, this is typically 7. Local number length is used to determine whether the number being dialed is local or long distance.
Dial Prefix	Number you enter to access an outside telephone line. In the US, this is typically 9, if required.
Dial Suffix	This is typically an internal accounting code used for billing long distance telephone usage to the proper department or cost center.
Called Subscriber ID (CSI)	This is typically your outgoing fax number and company name. This string can be a maximum of 20 characters long.

Information	Description
Transmitting Station ID (TSI)	This is typically your outgoing fax number. This string can be a maximum of 20 characters long. For best compatibility, restrict your TSI string to letters, numerals, plus signs, and spaces. The TSI string is used to negotiate with other fax devices and normally appears in the fax header at the top of each faxed page. Because the TSI will appear on the header even if the rest of the fax doesn't get sent, it is an especially good practice to make the TSI string your fax number. That way, people can fax you back in the event of problems. **Note:** Recent telecommunications laws in some countries (e.g., U.S.) now require that your TSI appear on any unsolicited fax transmissions.

Internet email servers

Internet email services are used to send faxes directly from email clients and implement DirectFax routing of received faxes to users' email inboxes.

Important: When setting up your POP3 Email-to-Fax gateway email account, do not use an email account that receives normal email. The fax server will try to process all received email on this account as an inbound fax. This can cause drastically degraded fax routing performance or unexpected application behavior. Furthermore, the fax server will remove email messages from this inbox. For these reasons, Esker strongly suggests setting up email user, such as autofax, for your POP3 fax routing and ensuring that email user autofax is left off distribution lists at your company.

Information	Description
SMTP Server Name	Fully qualified domain name or IP address of an outbound internet mail server. VSI-FAX uses this server to provide fax transmission notification to network clients and to send faxes as email attachments.
SMTP From Name	Default SMTP mailbox used to distribute fax transmissions. Default is user vsifax.
POP3 Server Name	Fully qualified domain name or IP address of the mail server where the POP3 user account resides.
POP3 User Name	POP3 user account for use with the Email-to-Fax gateway integration. The default is user autofax.
POP3 Password	Password for the POP3 user account.

Fax device properties

This information is used to configure supported fax modems for use with VSI-FAX.

Information	Description
Device Name	Short name for this device.
Description	Short descriptive name for this device.
Serial Port	Serial port this device will use to communicate with VSI-FAX.
Device Type	Either fax modem or Brooktrout fax board.

Final checks

Question	Answer
Have you stopped all existing processes running on serial ports that you will be connecting your fax devices to?	The answer must be yes for VSI-FAX to install and operate correctly.
Are ports 2996 and 2539 dedicated to VSI-FAX?	The answer must be yes for VSI-FAX to install and operate correctly.

Installing VSI-FAX server on Windows 2000/NT

This chapter describes how to install a VSI-FAX server on a supported Windows platform. For a list of supported platforms, see “Supported platforms and equipment” on page 17. To install VSI-FAX on a Windows 2003 server, you must first configure the Group Policy to allow the printer drivers to be installed.

For more information about configuring Windows 2003 servers, refer to “Windows 2003 printer driver” on page 42.

Tip: Use your completed “Appendix E – Fax Server Information Form” on page 243 to provide the information required during this installation.

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1. Load your VSI-FAX product CD-ROM into your CD-ROM drive.
2. If the installation program does not start automatically, run `setup.exe` located in the Server\W32 directory of your Esker product CD-ROM. The VSI-FAX Product Installation screen appears.
3. Choose VSI-FAX Server. The VSI-FAX Server Welcome screen appears.
4. Click Next to proceed with the installation. The Software License Agreement appears.
5. Click Yes to agree to the conditions in the license agreement and continue with VSI-FAX server installation or click No to exit the installation. If an existing VSI-FAX server is running, you will be advised that this fax server must be shut down before you can proceed with the installation.
6. Click Next to proceed with the installation.
7. If you agree with the Destination Location, click Next. Otherwise, click Browse to select a different location.

Tip: The installation program suggests a default destination directory for the VSI-FAX server program files. To install the VSI-FAX server in another directory, click Browse and follow the on-screen instructions.

---

8. Select which VSI-FAX components you want to install and click Next to proceed.

Note: The Fax Server and Virtual Fax Server selections are mutually exclusive; you never need to install both on the same machine. This is because a virtual fax server is essentially a normal fax server that does not have any fax devices connected to it; it is primarily used to integrate VSI-FAX with other business applications.

⏩ For additional information about virtual fax servers, refer to "Virtual fax server" on page 207.

9. The Start Copying Files screen provides a final opportunity to review which VSI-FAX components you will be installing and where the program files will be placed on your hard drive. Click Next to proceed with the installation.
10. The VSI-FAX Server License screen is only displayed for new fax server installations. Upgrade installations already have a valid serial number and activation key that the install program can read. Enter the serial number and activation key you received when you registered your product and click Next to proceed with the installation.
11. If you are participating in the Esker Pro Premium maintenance program, enter your maintenance license information when prompted and click Next.

Note: If this is an upgrade installation from a previous version of VSI-FAX, you must enter your maintenance license information to proceed with the installation.

Note: If you did not enter a serial number or activation key, you will not be asked for a maintenance license.

---

12. Enter the cover page information and click Next. This information will appear on a typical cover page.

    Users can change this information when they send a fax, or they can create other cover pages that show different information. However, in most cases this is the information you want your fax recipients to see most of the time.

Note: You may want to dedicate a separate email account on your company mail server for fax administration.

13. At the dialing properties screen, enter your country code, long distance access number, area code, local number length, dial prefix, and dial suffix. Enter your CSI and TSI strings and click Next to accept your dialing properties and proceed with the installation.

▶▶ See “Dialing requirements/ dial codes” on page 33.

14. Enter your SMTP server name, SMTP from-name, POP3 server name, POP3 user name, POP3 password, and confirm password. Click Next to continue.

Note: If you will not be using the Email-to-Fax gateway integration, you do not need to provide the POP3 user account information.

▶▶ See “Internet email servers” on page 36.

Important: When setting up your POP3 fax routing email account, do not use an email account that receives normal email. The fax server will try to process all received email on this account as an inbound fax, causing drastically degraded fax routing performance or unexpected application behavior. Furthermore, the fax server will remove email messages from this inbox. Therefore, Esker strongly suggests setting up an email user, such as autofax, for your POP3 fax routing and ensuring that this email user is left off distribution lists at your company.

15. When asked if you wish to install Brooktrout boards, click either Yes or No. If you click Yes, the fax board drivers will be installed before proceeding with the VSI-FAX server installation.

▶▶ For information about installing Brooktrout fax board drivers, refer to the *Brooktrout Fax Boards and Drivers* online manual.

16. If you click No, the Add a Fax Device screen will appear. Enter your device name and a short description, a serial port to use with this fax device, and select the appropriate device type. Click Add to add this fax device and proceed with the installation.

When asked if you wish to add another Fax Device, either click Yes to add another fax device or click No to continue.

Tip: To test or evaluate VSI-FAX in loopback mode, you can skip this part of the installation and add your fax devices later using the `vfxadmin` command or the MMC Fax Administration snap-in.

---

17. Click Finish to complete.

Tip: We strongly suggest that you start the VSI-FAX service. Otherwise, you will need to manually start the fax scheduler before you can test the fax server.

Windows 2003 printer driver

Before installing VSI-FAX on a Windows 2003 server, you must first change the Group Policy to allow the printer driver to install.

Note: If you do not reconfigure the Group Policy, you will receive the following error message: “The printer driver is not compatible with a policy enabled on your computer that blocks Windows NT 4.0 drivers. If you want to use this driver, contact your system administrator about disabling this policy.”

You can change the policy to allow the printer driver to be compatible by following these steps:

1. Go to Start > Run and type Gpedit.msc. This will open the Group Policy application.
2. Go to Computer Configuration > Administrative Templates > Printers > Disallow installation of printers using kernel-mode drivers.

Note: The default setting for this option is Not Configured, meaning that the installation of the driver is not allowed in Windows Server 2003.

---

3. Change the policy setting to Enabled and close the Group Policy application.
4. Run the VSI-FAX install, and the printer driver will install successfully.

Installing Brooktrout Fax Board drivers

- For information about installing Brooktrout fax board drivers, refer to the *Brooktrout Fax Boards and Drivers* online manual.

Installing VSI-FAX Server on Unix/ Linux

This chapter describes how to install a VSI-FAX server on a supported Unix or Linux platform.

▸▸ See “Supported platforms and equipment” on page 17 for more information about supported Unix or Linux platforms.

Tip: Use your completed “Appendix E – Fax Server Information Form” on page 243 to provide the information required during this installation.

---

1. Log in as root.
2. Open a terminal window if you are running X Windows.
3. Load your VSI-FAX product CD-ROM into your CD-ROM drive.
4. Mount the CD-ROM drive.

▸▸ Refer to “Appendix D – Sample Unix and Linux Mount Commands” on page 241 for additional information.

5. Change directory to the CD-ROM mount point by entering:
   `cd /cdrom`
6. Run the installation program by entering:
   `./install.sh`

   The installation program will guide you through the remainder of the fax server installation. Follow the on-screen instructions.

Tip: The installation program will ask if you want to start the fax scheduler. We strongly suggest that you start the fax scheduler. Otherwise, you will need to manually start the fax scheduler before you can test the fax server.

Testing the fax server

Immediately after installing the fax server, verify proper fax server operation by sending a simple test fax via the `vfx` command line. You can send this test fax using the loopback feature or you can send it to any fax machine.

Sending a test fax using the loopback feature

Sending a test fax using the loopback feature eliminates potential outside problems (e.g., phone lines, modems, etc) that could cause a fax transmission failure.

You need a small text file to use as a test fax. Any text file will do.

1. Open a command shell on your computer.
2. Verify that the fax server is running by entering:
   ```
   vfxstat -s 2
   ```
   Server status information is displayed. The display will be continually refreshed every two seconds.
3. Open another command shell on your computer.
4. Send your test fax by entering:
   ```
   vfx -n <fax_number> -d lb <my_file.txt>
   ```
   For example, to fax a test file called `MyFile.txt` to (800) 123-4567 using the loopback feature, you would enter:
   ```
   vfx -n 8001234567 -d lb MyFile.txt
   ```
   The test fax is sent to the loopback device queue.
5. Switch to the status command shell.

   You can track the status of your test fax as the display is continually updated.
6. After your test fax is successfully sent, it is routed to your received fax inbox. You can open and view this file with the multi-page TIFF viewer on your computer to verify that the fax was sent correctly.

7. Run the vfxilog command. The first entry listed will show the request ID of the last fax that was received. Write down this request ID. The fax will be stored in the fax queue for the user named in the clientid column.
8. Launch your multi-page TIFF viewer.
9. Open the `<request_ID>.tif` file located in the fax server `faxq/<user>` directory, where `<request_ID>` corresponds to the test fax request ID you wrote down.

   Your test fax is displayed in your multi-page TIFF viewer.

Sending a test fax to a fax machine

You need a valid fax number for a fax machine in your area. You also need a small text file to use as a test fax. Any text file will do.

1. Open a command shell on your computer.
2. Verify that the fax server is running by entering:
   ```
   vfxstat -s 2
   ```
   Server status information is displayed. The display will be continually refreshed every two seconds.
3. Open another command shell on your computer.
4. Send your test fax by entering:
   ```
   vfx -n <fax_number> <my_file.txt>
   ```
   For example, to fax a test file called `<my_file.txt>` to (800) 123-4567, you would enter:
   ```
   vfx -n 8001234567 <my_file.txt>
   ```
   The test fax is sent to the default device queue.
5. Switch to the status command shell.

   You can track the status of your test fax as the display is continually updated.

   Your test fax should be received by your fax machine.

Installing MMC fax server administration

Important: Before you can use MMC fax server administration, you not only have to install the product, but you must also load the MMC fax server administration snap-in from a Microsoft Management Console (MMC) session. However, the last installation screen provides an option to immediately launch the MMC fax server administration. If you leave this option set (the default setting), the snap-in will be automatically loaded for you. Even if you decide to immediately close MMC fax server administration, you will have the option of saving your configuration (with the snap-in loaded) for future use. We strongly recommend that you do this. Otherwise, you will have to manually load the snap-in the first time you use it. Refer to the *VSI MMC Fax Server Administration Online Help* for additional information about loading the snap-in from a Microsoft Management Console (MMC) session.

1. Load your VSI-FAX product CD-ROM into your CD-ROM drive.
2. If the installation program does not start automatically, run `setup.exe` located in the root directory of your VSI product CD-ROM.

   The VSI-FAX Product Installation screen appears.
3. Choose VSI MMC Fax Server Administration.

   The Welcome screen appears.
4. Click Next to proceed with the installation.

   The Software License Agreement appears.
5. Click Yes to agree to the conditions in the license agreement and continue with mmc fax server administration installation or click no to exit the installation.
6. If you agree with the Destination Location, click Next. Otherwise, click Browse to select a different location.

Tip: The installation program suggests a default destination directory for the MMC Fax Server Administration program files. If you want to install the MMC Fax Server Administration in another directory, click browse and follow the on-screen instructions.

7. Select which VSI-FAX components you want to install and click Next to proceed.

   The program files are copied to the your local hard drive. This may take several seconds.

8. Click Finish.

Setting up a new Fax Server icon

Before you can administer VSI-FAX using the MMC, you need to set up a new Fax Server icon.

1. Right click the VSI Server Administration icon, and select New > Fax Server
2. When prompted, enter the hostname of the VSI-FAX server in the Fax Server field.
3. Enter vsifax in the User ID field.
4. If you have not added a password for the vsifax user within the VSI-FAX database, do not enter a password in the Password field. Otherwise, enter the password that you assigned to the vsifax user.
5. Select Console > Save to save this new Fax Server icon.

Installing the Outlook Fax Client

The VSI Outlook Fax Client requires Outlook 97, 98, or 2000 running in Corporate or Workgroup mode; Internet-only mode is not supported under any circumstances.

⏩ Refer to your Outlook documentation for information about configuring Outlook for Corporate or Workgroup mode.

Note: The reason the Outlook Fax Client will not work with Outlook in Internet only mode is that our fax technology requires the full MAPI DLLs, which are only installed when you configure Outlook for Corporate or Workgroup mode.

The preferred way to use the Outlook Fax Client is to use Outlook with a Microsoft Exchange Server. Although this is the preferred configuration, the Exchange Server is not required. However, if you run Outlook without an Exchange Server, you will not have access to the custom fax form.

Basic installation procedure

1. Load your VSI-FAX product CD-ROM into your CD-ROM drive.
2. If the installation program does not start automatically, run `setup.exe` located in the root directory of your VSI product CD-ROM.
3. Choose VSI Outlook Fax Client.

   If an existing version of the Outlook Fax Client is detected, you will be advised that this older version must be removed before you can proceed with the installation.
4. Click Yes to remove the old Outlook Fax Client and proceed with the installation. The Welcome screen appears.
5. Click Next to proceed with the installation. The Software License Agreement appears.
6. Click Yes to agree to the conditions in the license agreement and continue with Outlook Fax Client installation.

7. Click Next if you agree with the default destination directory for the Outlook Fax Client program files. To install the Outlook Fax Client files in another directory, click Browse and follow the on-screen instructions.

   The program files are copied to the your local hard drive. This takes several seconds.

8. Enter the name of your fax server.
9. Enter your VSI-FAX user account login name (user ID).
10. Click Next to proceed with the installation.
11. Select your form publishing option (personal forms library, organizational forms library, or none).

Note: If you want to use the custom fax form provided with the Outlook Fax Client, you must decide where you want to publish it. You can either publish to the organizational forms library or your personal forms library.

---

12. Click Next to proceed with the installation.

Tip: You can use the Outlook Fax Client to send faxes directly from Outlook or from another Windows application. Refer to the *Outlook Fax Client Online Help* for additional information.

Windows Terminal Server installation notes

This section provides critical information for successfully installing the VSI Outlook Fax Client in a Windows Terminal Server environment.

Additional Windows Terminal Server requirements

- Windows NT Server, Terminal Server Edition, Version 4.0 with Service Pack 4 (or higher)
- Windows 2000 Server or Windows 2000 Advanced Server with Terminal Services enabled

General application notes

To successfully install the VSI Outlook Fax Client in a Windows Terminal Server environment, please note the following:

- Terminal Server client users must not run or launch Outlook during the install or uninstall procedures.
- Multiple mail profiles are not supported in a Terminal Server environment with the VSI Outlook Fax Client. The installation program will only add the VSI Outlook Fax Client service to the default mail profile for each user.
- The Fax Message Form can only be published to the Organizational Forms Library of your Exchange server (or not at all). Ensure that you have the appropriate publication rights before you install.
- Each Terminal Server client user must have a unique path name defined for their Terminal Server `Home` Directory (not to be confused with a user's `Home` Directory).
- Ensure that you run the VSI Outlook Fax Client setup program in Install Mode via either the Add/Remove Programs Control Panel applet or by using the change user /install command at the command prompt.

For more information about Install Mode, see “Install mode” on page 26.

- Once the software is installed, have all of your Terminal Server client users restart their sessions before attempting to use the VSI Outlook Fax Client.

Important caching information

In the Windows Terminal Server environment, it is possible that some users will not see the VSI Outlook Fax Client exchange extension the first time they log into the Terminal Server following product installation. This is because Outlook maintains a cache of the registered Exchange extensions and may use that cache instead of checking if any new extensions have been registered.

There are two ways to remedy this:

- Manually delete all Outlook cache files
- Force Outlook to regenerate each cache File

Deleting all Outlook cache files

This method is faster (especially if there are many Terminal Server users) but should only be attempted by experienced system administrators.

1. Ensure that Outlook is not running in any Terminal Server session.
2. Search for and delete all instances of `extend.dat` on the Windows Terminal Server machine.

   This file is typically found in each user's Outlook data directory. It is also sometimes found in the `\WINNT` directory.

   The next time Outlook is started, the `extend.dat` file will be regenerated.

Forcing Outlook to regenerate each cache file

This method is safer than manually deleting the cache files. However, this method must be performed by each Terminal Server user.

1. Open Outlook.
2. Choose Tools > Options. The Options dialog box appears.
3. Click the Other tab.
4. Click Advanced Options. The Advanced Options dialog box appears.
5. Click Add-In Manager. The Add-In Manager dialog box appears.

   If the VSI Outlook Fax Client add-in does not appear in the list, proceed with the remainder of this procedure.
6. Change your current add-in configuration by setting or unsetting any item in the add-in list, and write this information down.
7. Close the Add-In Manager, Advanced Options and Options dialog boxes by successively clicking OK in each one.
8. Close and restart Outlook.
9. Perform Steps 2 through 5 again.

   Now the VSI Outlook Fax Client add-in should appear in the add-in list.
10. Undo the change you made in Step 6 (i.e., restore it to the original setting).
11. Close the Add-In Manager, Advanced Options, and Options dialog boxes by clicking OK in each one.

Installing CoverMaker

Install CoverMaker if you want to design your own custom fax cover pages.

1. Load your VSI-FAX product CD-ROM into your CD-ROM drive.
2. If the installation program does not start automatically, run setup.exe located in the root directory of your VSI-FAX product CD-ROM.
3. Choose VSI CoverMaker. The Welcome screen appears.
4. Click Next to proceed with the installation. The Software License Agreement appears.
5. Click Yes to agree to the conditions in the license agreement and continue with CoverMaker installation.
6. Click Next if you agree with the default destination directory for the CoverMaker program files. To install CoverMaker in another directory, click Browse and follow the on-screen instructions.
7. Enter the name of your fax server.
8. Enter your VSI-FAX user account login name (client ID).
9. Click Next to proceed with the installation. The Select Program Folder screen appears.
10. The default program folder is VSI. If you want to have the program shortcut placed in a different folder, select that folder from the Existing folders list. Otherwise, go to the next step.
11. Click Next to proceed with the installation.

    The program files are copied to the your local hard drive. This takes several seconds.
12. When the Setup Complete screen appears, click Finish.

Installing the Software Development Kit

1. Load the VSI-FAX CD-ROM into your CD-ROM drive.

   If the installation program does not start automatically, run `setup.exe` located in the root directory of your VSI-FAX product CD-ROM.

   The VSI-FAX Product Installation screen appears.

2. Choose SDK. The Welcome screen appears.
3. Click Next to proceed with the installation. The Software License Agreement appears.
4. Click Yes to agree to the conditions in the license agreement and continue with SDK installation or click No to exit the installation.
5. Click Next if you agree with the default destination directory for the SDK program files. Otherwise, click Browse and follow the on-screen instructions to install the SDK in another directory.

   The program files are copied to the your local hard drive. This may take several seconds.

Fundamentals

This chapter introduces and briefly describes various fundamental concepts that should be thoroughly understood before you begin administering your VSI-FAX server.

Important terms and concepts

This section defines some important terms and concepts that you should understand before you begin administering your fax server.

Fax devices

Fax devices can be either single-channel modems or multi-channel fax boards.

There are also two special devices: loopback (lb) and sendmail (sm). The loopback device is used to route fax requests back to the originating user's fax inbox. The sendmail device is used to send faxes as email attachments.

Classes

Faxes can be sent to either a single physical device or a group of devices called a class. For example, a class could be a group of devices dedicated to long distance calls, or a group of devices used only for high-volume fax requests. A class can only contain physical devices; it cannot contain other classes. However, any device can be included in one or more classes. When a fax is sent to a class, it will be routed to the first available device in that class.

Queues

Each device and class has a queue. Pending fax requests are held in the queue until the job is completed.

Users

To send or receive faxes, a person must be registered in the fax server user database. User information is the most basic and unique information about each fax user, such as username and password. Most fax settings and privileges are actually controlled via profiles.

Profiles

Profiles provide centralized management of fax user settings and privileges.

Master Profile	The master profile is created during fax server installation. Depending on how you use it, the master profile can provide completely centralized control over a user's fax settings and privileges.
User Profiles	Unless a user profile exists for a fax user, all fax settings and privileges are centrally controlled from the master profile. If you want to grant certain users greater flexibility or privileges, create a user profile for them.
Inheritance	If a user profile exists for a fax user, each time they accesses the fax server (e.g., send a fax or explicitly log into the fax server for some other reason), their user profile is dynamically created at that moment by merging the inheritable settings from the master profile with persistent user preferences stored in their user profile. If the user explicitly logs in to the fax server, these setting remain in effect until the user logs off.

Important: Do not delete the master profile under any circumstances.

If you want to use the settings from your user profile, you must specify it when sending the fax. To send a single fax request using your profile settings, include this on your vfx command line:

```
vfx ... -t udf="yes"
```

To send a single fax request without using your profile settings, include this on your vfx command line:

```
vfx ... -t udf="no"
```

Note: If you do not want to use your profile settings to send a fax, you can also omit the udf tag from your fax envelope. Not including it is the same as setting it to false or no.

Licenses

VSI-FAX uses a pure client/server architecture. Even users logged directly into the fax server are in fact communicating with the fax server via a network connection; this network connection just happens to have the same IP address as the server. If you send a fax from a different IP address than the fax server (i.e., you do not telnet, rlogin, or use the keyboard at the fax server), you must have a valid VSI-FAX client license to do so.

Serial Numbers and Activation Keys

All VSI-FAX licenses comprise of two elements: a serial number and an encrypted activation key. You must have **both** pieces of information in order to activate that license on your fax server.

Maintenance License

When you subscribe to one of Esker's maintenance plans, you are given a maintenance license serial number and activation key. You must install this license on your fax server to perform future upgrades to your fax server. Each fax server can have only one maintenance license installed.

Directories

Directories store fax addressing and routing (i.e., fax recipient) information.

People	People records store fax addressing and routing information for a single individual.
Groups	Group records are lists of people. They are a convenient method of sending the same fax to multiple people. This is useful for faxing an entire department or marketing prospect list. Groups can also be used to receive faxes for an entire work-group, allowing any member of that group to process received faxes on behalf of the entire group. This is useful for departments like Customer Support or Sales where fax supports duties can be shared among various persons in the group.
Public directory	There is only one public directory. It is read-only to all fax users and can be used to send or route faxes to anyone listed in the public directory. Only fax administrators can modify information in the public directory.
Private directories	Private directories are owned by a particular user and are typically controlled so only that user can access these entries. Only one private directory can be displayed at a time, and the owner is the only person who can modify information in that private directory.
External directories	VSI-FAX supports external Lightweight Directory Access Protocol (LDAP) directories for storing fax addressing and routing information. However, before you can use an LDAP directory, you must explicitly add it via MMC. Refer to the *MMC Fax Administration* online help for additional information.

Resources

Resources are common elements that are available to all users when they send faxes.

Attachments	Attachments are text, PCL, TIFF or Postscript files that can be added to a fax transmission. Attachments are usually re-usable items such as price lists and promotional materials that are repeatedly sent. In Windows, attachments may also be any document type supported by DDE.
Cover Pages	VSI-FAX cover pages are template files that dynamically populate themselves with information when a fax is sent. You can use the default cover pages that Esker provides or design your own with CoverMaker.
Folders	Folders are a logical collection of attachment files. When you attach a folder to a fax, all files in that folder are included in the fax.
Overlays	Overlays are files, such as letterhead, that can be placed on top of a fax.

⏩ Refer to “Installing CoverMaker” on page 55 for CoverMaker installation instructions, and refer to the CoverMaker online help for information about using CoverMaker to design custom cover pages.

Logs

The fax server generates many different kinds of logs. You can use these logs to troubleshoot problems, get fax status, or review server history.

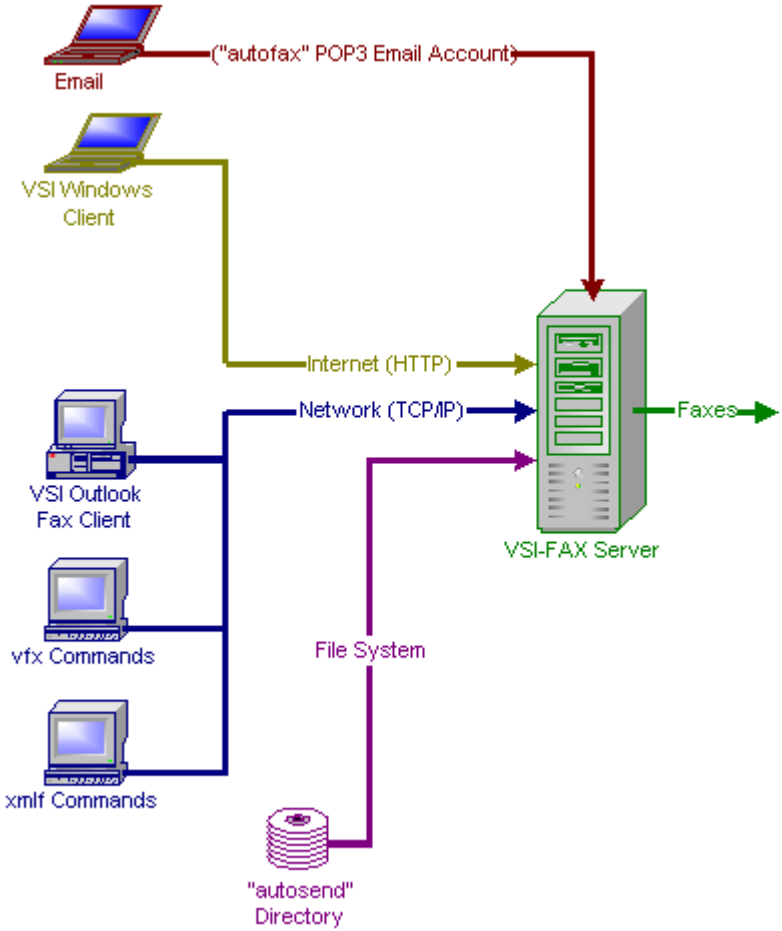
Event logs	Event logs provide detailed information about each device, class, or fax server process.
Inbound fax log	The inbound fax log maintains a detailed record of each received fax.
Outbound fax log	The outbound fax log maintains a detailed record of each sent fax request.

Functional overview

This section briefly describes how VSI-FAX sends, receives, and routes faxes.

Sending faxes

One of the primary design goals of VSI-FAX is to provide as many reliable ways as possible to send a fax. You can send a fax by logging on to the fax server and entering information in a command shell, by sending an email message to the fax server, by placing a file in the autosend directory, or via one of our graphical fax clients. This figure shows the various ways you can send faxes with VSI-FAX:



Sending Faxes with VSI-FAX

Email

VSI-FAX provides an Email-to-Fax Gateway feature that allows you send faxes via email to the fax server, following these steps:

1. Create a new email user account on your corporate mail server (we recommend that you use autofax for this user account).

2. Enter the fax recipient information in a specific format (i.e., `<fax_number>` or `<fax_number>[subject]`) in your email message subject line.
3. Send your fax email messages to `autofax@my_company.com`.

VSI Windows Client

The VSI Windows Client is an easy-to-use front end to the VSI Fax server. It is designed to provide an easy way for desktop users to use VSI-FAX. The Windows client allows users to send faxes, view sent faxes through an Outbox, and view received faxes through an Inbox.

Using the VSI Windows Client, you can send faxes using either of two methods:

- Send a fax from an application that allows you to print
- Send a fax directly from the Windows Client

▶▶ See the *VSI Windows Client* online documentation for more information on installing and using the Windows Client.

VSI Outlook Fax Client

The VSI Outlook Fax Client provides advanced desktop faxing capabilities for Microsoft Outlook and Exchange users.

- The Outlook fax client includes a custom form and fax status applet that tightly integrates with the Microsoft Outlook messaging client
- Use your Outlook Contacts folder or Personal Address Book to store your fax recipient information
- Faxes are sent directly to the fax server via your network; they are not routed through the Exchange server.

vfx commands

The simplest way to send a fax is to log on to the VSI-FAX server), open a command shell, and enter a `vfx` command. For example, to fax `my_file.txt` to local fax number 555-1212, enter:

```
vfx –n 555-1212 my_file.txt
```

Note: If you do not specify a device name, the default device will be used.

For more information about `vfx` commands, see "Basic fax server administration" on page 75.

XMLF commands

You can also use xmlf commands to send faxes. However, your fax information must be submitted as a conforming XML-F fax submit Document Type Definition (DTD).

XML-F is typically used for fax integrations (i.e., users typically do not send faxes using XML-F).

Refer to "Using XML-F" on page 217 for additional information about XML-F.

Autosend directory

The autosend directory is an advanced feature that allows you to send faxes just by placing special files (i.e., VSI-FAX tag and batch files) in this directory.

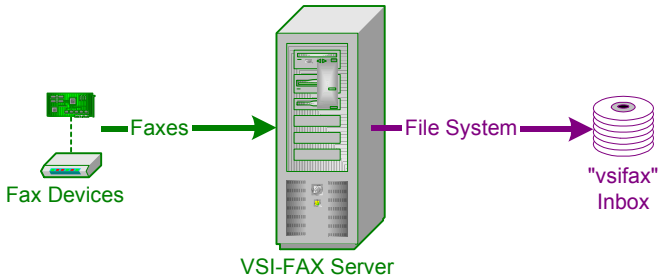
Receiving faxes

Receiving faxes is quite different from sending them. Consider that when you send a fax, you begin with various pieces of information, then you rasterize (image) that information into a document that can be transmitted over a telephone line. However, once the document is imaged, it ceases to be anything other than pixels at various gray-scale color depths (it no longer contains anything that can be understood as human-readable data).

Of course, when you receive a fax, the reverse is true. All you know for certain is that a particular fax device (i.e., a modem or channel on a fax board) answered a telephone call and received a fax (i.e, a rasterized file). So while the person sending the fax intends for it to be read by a particular person, in most cases the fax server doesn't have any idea who that person is.

VSI-FAX handles this situation by creating a default inbox for all incoming faxes. It uses the only user account it is certain exists on all systems (user vsifax). Therefore, until you change these settings, the default behavior is

that all incoming (received) faxes are placed in user vsifax's inbox as shown in this figure:



Receiving Faxes with VSI-FAX

Incoming faxes are stored as numbered TIFF files in this directory. You can view these files by going to the vsifax inbox directory and opening them with a multi-page TIFF file viewer.

Important: You must have a multi-page TIFF viewer installed on your system in order to view received faxes. While most paint programs can open a multi-page TIFF file, they only display the first page and are therefore unsuitable for viewing faxes (in most cases, you will only see the fax cover page). Wang Imaging for Windows is a common multi-page TIFF file viewer that is provided free with Windows 95, 98 and NT. Similar programs are also available for Unix and Linux systems.

You can customize the way VSI-FAX processes received faxes for each inbox. Depending on your settings, VSI-FAX will automatically perform one or more of the following actions each time a fax is received:

- Print the fax (this emulates a standalone fax machine)
- Notify someone via email that a fax has arrived
- Forward the fax as an email attachment

After performing these actions, you can also configure VSI-FAX to do one of the following:

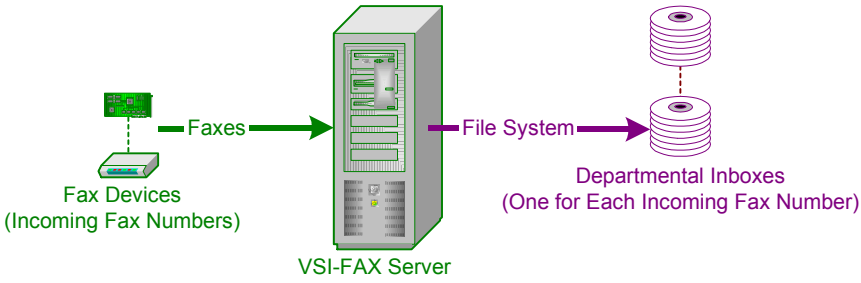
- Delete the received fax
- Archive the received fax (move it from the inbox to another directory)

- Leave the received fax in the inbox

Simple departmental fax routing

You can see that the level of fax routing provided with a default VSI-FAX system is very modest. It is really only suitable for small companies with a single fax telephone number.

If your fax server has more than one fax device (modem or fax board) installed, you can easily extend this default routing behavior by creating a departmental user account for each of your incoming fax numbers. VSI-FAX will automatically create a new fax inbox for each of these departmental users. Furthermore, one of the settings that VSI-FAX stores for each fax device is the default inbox for received faxes. Simply change each device's default inbox to one of your new departmental inboxes and VSI-FAX will route faxes received on a particular telephone line to the correct inbox as shown in this figure:



Simplified Departmental Routing Diagram

The advantage to this approach is that it is very inexpensive because you do not have to purchase any additional telephone numbers or services from your telephone company.

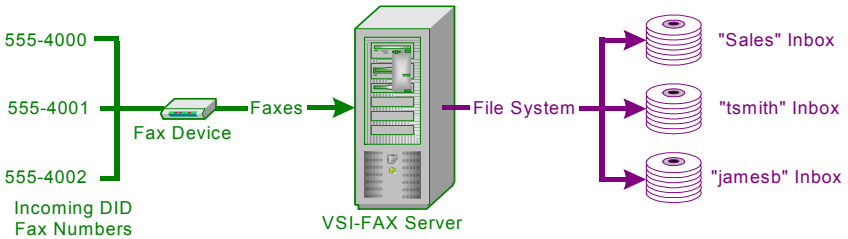
DirectFax routing

DirectFax is an advanced fax routing feature that expands the simplified departmental routing scheme to cover individual fax users. This is how it works.

Thus far, our discussions have assumed that each fax device can only answer one incoming fax telephone number. That is not precisely true. Contiguous blocks of Direct Inward Dial (DID) telephone numbers can be purchased

from most telecom providers. One important feature of these DID numbers is that they are answered from a single trunk telephone line. Therefore, if you connect a fax device to a DID trunk line, that single fax device can actually answer more than one incoming fax telephone number.

DID numbers typically comprise a contiguous block of one hundred numbers beginning with xxx-x00 and ending with xxx-xx99. If a DID number is assigned to each fax user, then VSI-FAX can strip off the last four digits of the incoming fax number and use that information to route the fax to the appropriate user's inbox as shown in the following figure:



DirectFax Routing Diagram

Imaging overview

This topic explains how files are imaged (i.e., converted to TIFF files) so that they can be faxed.

Basic imaging

Multi-page Tagged Image File Format (TIFF) is the basic underlying file format used to send all faxes with VSI-FAX. However, you do not have to restrict your faxing to just TIFF files. VSI-FAX supports conversion of several common file types to TIFF files so that they can be faxed.

VSI-FAX will image these file types on all supported fax server platforms:

- ASCII text files with a `.txt` extension
- PCL 5e files with a `.pcl` extension
- Epson printer files with a `.ep` extension
- PostScript Level 1 files with a `.ps` extension

- TIFF group 3 or group 4 files with a `.tif` extension
- PDF files with a .pdf extension (Windows only)
- RTF files with an .rtf extension (Windows only)

Note: To image PDF files, you must have Adobe Acrobat Reader installed.

File extensions

If you supply a file extension, the fax server will image that file accordingly.

If you do not supply a file extension or supply a file extension that the fax server cannot recognize, the fax server will try to determine what kind of file it is by examining the first 256 bytes of that file:

- If the file server can determine that it is a PostScript, PCL, or TIFF file, it will image it accordingly.
- If the file server cannot determine that it is a PostScript, PCL, or TIFF file, it will image the file as plain ASCII text.

Tip: The best practice is to ensure that any files you want to fax have the correct file extensions. However, in most cases you can get away with not supplying file extensions for properly constructed PostScript, PCL, or TIFF files.

Extended imaging

If the fax server is running on Windows NT/2000, you can also image any file types associated with an application in the Windows registry. When the fax is sent, the native application associated with that file extension will be used to image the fax via Windows Dynamic Data Exchange (DDE).

Common file types supported on a Windows fax server are:

- Adobe Acrobat Portable Document Format (PDF) files with a `.pdf` extension
- Microsoft Excel files with a `.xl?` extension (i.e., `.xl` followed by any other character)

- Microsoft PowerPoint files with a `.ppt` extension
- Microsoft Word document files with a `.doc` extension
- Microsoft Word Rich Text Format (RTF) files with a `.rtf` extension

However, your Windows fax server will almost certainly have other file types registered. Launch Windows Explorer and choose View > Options > File types to see a complete list of all supported file types on your Windows fax server.

Installing and configuring the rtf-to-tif formatter

The rtf-to-tif formatter is a program that converts RTF documents to TIFF format. This program can also be used to format Microsoft Word documents. To properly format RTF documents using this program, you must download the Microsoft WordView application from Microsoft's web site.

To install and configure the rtf-to-tif formatter:

1. Set the VSI-FAX server service to log in as an existing user.

   Note: This user will be used to image RTF documents.

2. Install the WordView application. When asked if .rtf or .doc files should be opened with WordView or Microsoft Office Word, choose Microsoft Office Word.
3. Once installation is complete, launch the WordView program by choosing it from Start > Programs > Word Viewer.
4. Copy the rtftotif.exe program from the CD-ROM into the %VSIFAX%\lbin folder.
5. Open the %VSIFAX%\lib\formatters.lst file in a text editor, and add the following text to the end of the file:

   ```
   rtf:rtftotif.exe::
   ```

6. Save and close the formatters.lst file.
7. Stop and restart the VSI-FAX server.

Imaging server

An imaging server is a way to provide extended imaging services for a Unix fax server. If you have both a Unix fax server and a Windows fax server on the same network, you can configure them such that the Windows fax server images the additional file types, not normally available on Unix, for the Unix fax server.

⏩ See “Imaging server setup and configuration” on page 139 for additional information.

The vsifax user account

Whenever a fax server is installed, a fax administration user account is automatically created. The user ID for this account is vsifax. You should log in as user vsifax any time you perform fax server maintenance.

Initially, the vsifax user account is not password protected. You may want to assign a password to the vsifax user account to ensure that unauthorized users cannot perform fax server maintenance.

Because the vsifax user account is intended to be an administrative account, you should not use this account for normal faxing. The reason is that the vsifax user account will receive notifications of various system activity. It is important that the person monitoring the vsifax inbox be able to distinguish these notifications from normal send and receive fax activity. Conversely, these system notifications can be distracting to normal fax users. Therefore, it is best to reserve the vsifax user account for strictly administrative purposes.

Basic fax server administration

This chapter describes the basic tools, techniques, and procedures used to administer a VSI-FAX server.

Tools and techniques

This section describes the various tools and techniques you can use to administer your VSI-FAX server. Many fax administration tasks can be accomplished more than one way (e.g., from the command or via a graphical administration environment such as the Microsoft Management Console).

Microsoft Management Console (MMC)

VSI MMC Fax Server Administration is a Microsoft Management Console snap-in that allows you to manage your fax server from a common Windows-based Graphical User Interface (GUI).

Before you can use VSI MMC Fax Server Administration, you must install the software from your VSI-FAX product CD-ROM and load the snap-in from a Microsoft Management Console (MMC) session.

▶▶ See "Installing MMC fax server administration" on page 49.

▶▶ Refer to the *VSI-FAX MMC Fax Server Administration Online Help* for additional information about loading the snap-in from a Microsoft Management Console (MMC) session.

Command line

VSI-FAX administration commands can be entered from any Unix/Linux or Windows command shell. Help for these commands is available by entering the command followed by a question mark argument. For example, to get help for the `vfxadmin license` command, enter:

`vfxadmin license -?` or `vfxadmin license -help`

▶▶ Refer to your *VSI-FAX Reference Addendum* for additional information about VSI-FAX commands.

Modifying configuration files

Another way you can perform VSI-FAX administration is by directly modifying one of the various configuration files with a text editor.

⏩ Refer to your *VSI-FAX Reference Addendum* for additional information about specific entries in VSI-FAX configuration files.

Starting and stopping the scheduler

Before a fax request can be submitted, the scheduler must be running. Additionally, you must stop the scheduler to perform certain maintenance activities, then restart it to resume normal operation.

Note: To start or stop the scheduler, you must be logged on as root or vsifax on Unix. On Windows, you must be logged in as Administrator of have Administrator privileges.

To start the fax scheduler, enter:

```
vfxsched start
```

A message displays indicating success or failure.

To stop the fax scheduler, enter:

```
vfxsched stop
```

A message displays indicating success or failure.

To stop scheduler and restart it with a single command, enter:

```
vfxsched restart
```

Getting scheduler status

You can also use the `vfxstat` command to return status information from the scheduler. This includes confirmation that the scheduler is running and that a particular device is ready to begin processing fax requests.

When one or more devices have been initialized and the scheduler is waiting to accept fax requests, device states are shown as idle.

To check device status only, enter:

```
vfxstat
```

Although the status of the scheduler is given in the output of almost any option used with `vfxstat`, the `-r` option quickly reports whether the scheduler is running or not.

To check only scheduler status, enter:

```
vfxstat -r
```

A message displays indicating success or failure.

You can also verify that the associated scheduler command processes have been successfully started. You will see at least the following list of processes with the `vfxsched list` command.

To verify that the scheduler is running, enter:

```
vfxsched list
```

Depending on your exact system configuration, you may see additional processes listed. For example, if you set up the email-to-fax gateway during fax server installation, you will also see a `vpopd` process in the list.

To show administrator information (i.e., a complete list of devices, classes, and server information), use the `vfxstat -a` command.

```
vfxstat -a
```

Sending faxes

The simplest `vfx` command uses just two parameters: the `-n` (fax number) option followed by the filename. For example, to fax `my_file.txt` to local fax number 555-1212, enter:

```
vfx -n555-1212 my_file.txt
```

While this very simple fax command line will suffice for very simple applications, generally more control is required. Tags allow you to include more information and precisely control various fax settings. Each tag must begin with the `-t` (tag) option, followed by the tag/value pair. To send the same fax as the previous example using tags, enter:

```
vfx -t tfn=555-1212 -t fll=my_file.txt
```

To send this same fax but also include a classic cover page, enter:

```
vfx -t tfn=555-1212 -t fll=my_file.txt -t cvr=classic
```

Viewing fax requests

A request submitted with `vfx` is queued for a fax device or class. The scheduler manages the request until it is completed, canceled, or until it expires because the maximum number of retry attempts was reached.

You can view the status of all active fax requests with the `vfxstat` command. Status is displayed in the following format:

Job Num	Fax Request ID Number. This unique ID number is used to identify each fax request.
Dest	Displays the assigned fax device or class queue for each fax request.
User	The fax server user ID of the person who submitted the fax request.
Submitted	The time the fax request was submitted in MM/DD HH:MM format. For example: 03/28 16:36.
Scheduled	The scheduled time for the initial or next fax attempt. For example, if a second (retry) attempt is necessary, you will see the next time that fax request is scheduled to be sent.
Att	The number of attempts the fax request has initiated.
Pri	The priority of the fax request: Urgent, High, Medium or Low.
Result	Result status of the latest fax request attempt. If the fax request has made several unsuccessful attempts, it will reflect the result status of the most recent attempt.
Group	When the fax request is part of a Group Broadcast, a number appears in this column. This number is the Group request ID number associated with that fax request. Both the Group request ID number and the fax request ID number are unique for tracking purposes.

To view all fax requests currently in the queue, enter:

```
vfxstat
```

Canceling fax requests

A request can be canceled using the `vfxcancel` command. You will need to know the fax request id number. This can be obtained using the `vfxstat` command.

Note: A fax request can only be canceled by the fax administrator or the user who originally sent the fax.

To cancel a fax request 1004 using the `vfxcancel` command, enter

```
vfxcancel 1004
```

To confirm the `vfxcancel` action using the `vfxstat` command, enter:

```
vfxstat
```

You will notice that fax request 1004 is not listed because it has been canceled.

You can use `vfxcancel` to cancel multiple faxes as well. To cancel requests 1005 and 1009, enter:

```
vfxcancel 1005 1009
```

License management

A network client is any VSI-FAX application running on a computer with a different IP address than the fax server. Each client must have its own license in order to connect to the fax server. These client licenses must be installed on the fax server before you can register client users. Installing a license only provides the capability of connecting to the fax server.

Adding client licenses

Note: You must also register client users in the VSI-FAX database (i.e., assign their fax server logon name) before they can send faxes. Client licenses are always installed on the fax server, not the client computer or workstation.

Command line

1. Log into the fax server as user vsifax.
2. Add client licenses by entering the following:

   ```
   vfxadmin license
   ```

   You will be prompted for the client serial number and activation key. Once installed, the number of users specified by the license activation key will be added to the license table. If you install another license, the number of users allowed by the new license will be added to those already installed.

User administration

You must register each user who will be sending or receiving faxes with VSI-FAX. There must be sufficient licenses installed on the sever for each user to have their own license.

Registering users

When a user is registered on the fax server, an account for that user is created in the user database, which is located in the `$VSIFAX/spool/dbs` directory. Every individual who uses VSI-FAX to send or receive faxes must be registered on the fax server, and each user must have a unique VSI-FAX user ID. The VSI-FAX user ID does not have to be the same as any other login name used by that individual.

Note: Administrators do not have to explicitly register new VSI-FAX users because new users are automatically registered the first time they connect to the fax server. Outlook and web fax client users are also licensed the first time they connect to the fax server.

Command line

For example, to register fax user Bill Franks with the user ID billf, enter:

```
vfxadmin user -n "Bill Franks" billf
```

The `vfxadmin user` command can also used to register and license a user at the same time. For example, to register and license user Bill Franks (user ID billf), enter:

```
vfxadmin user –L -n “Bill Franks” billf
```

Changing a user’s name and password

A user's VSI-FAX logon information is stored in the fax server user database. Two different command line utilities can be used to change a user’s name or password:

- Use `vreguser` if you want to change your name or password.
- Use `vfxadmin user` if you are a fax administrator and want to change another user’s name or password.

Command line

If user billf wants to change his user name from Bill Franks to William Franks, he would enter:

```
vreguser -n “William Franks”
```

If the fax administrator wants to change user billf’s name from Bill Franks to William Franks, he would enter:

```
vfxadmin user -n “William Franks” billf
```

If user billf wants to change his password, he would enter:

```
vreguser -p
```

The system will prompt user billf to enter his new password.

If the fax administrator wants to change user billf’s password, he would enter:

```
vfxadmin user -p billf
```

The system will prompt the fax administrator to enter billf’s new password.

Deleting a user

To delete user ID billf, enter:

```
vfxadmin user -x billf
```

Displaying a list of registered and licensed users

To display a list of registered and licensed users, use the command:

```
vfxadmin user -l
```

Assigning a DID extension to a user

A Direct Inward Dial (DID) extension is primarily used to implement the DirectFax automatic routing feature. DirectFax allows each user to have his or her own unique fax number so that faxes can be routed directly to their personal email inbox.

A fax routed to an email inbox arrives as a TIFF formatted attachment to an email message. TIFF files can be opened and viewed with any common imaging editing or viewing software.

Command line

To assign a user's DID extension, enter:

```
vfxadmin user -e <ext> <user>
```

Device administration

Devices are either single-channel modems or Fax boards, which usually provide several output channels on a single board.

Adding and removing devices

For a physical fax device to send fax requests, it must be added to the system, set to accept requests, and enabled. Before incoming faxes can be received, receive capability must also be set and it must be enabled. Typically, a device only needs to be added to the system once.

Note: You must be logged in as root or user vsifax to add or remove devices. When a device is added to the system, it is set to enabled and accepting for both send and receive requests by default.

Before you add or remove a device, you must stop the fax scheduler. After adding or removing a device, you must restart the scheduler in order for these changes to take affect.

If you add or remove devices while the scheduler is running, you will be warned that the changes will not take effect until the scheduler is restarted.

Unix/Linux command line

To add device `tty01`, you must use the `vfxadmin device` command.

vfxadmin device -a -v /dev/tty01 -n “<comment>” fax2

Note: If you want the added device to be the default destination, add the `-d` option to the `vfxadmin device` command.

At the time a device is added, you must specify the serial port name. Additional options that can be used include:

- Status (enabled, sending, receiving, accepting)
- Receive notify procedure
- Speaker mode

Once the device is configured, you can use `vfxadmin device` to list the device information. To list the parameters for a device fax2, enter:

```
vfxadmin device -l fax2
```

You can verify that the device has been added by using `vfxstat -t` by entering the following:

```
vfxstat -t
```

Important: Before removing a device, be sure that no requests are scheduled for it. You have to cancel or modify existing requests before removing the device.

To remove a device, enter:

```
vfxadmin device -x fax2
```

You can use the `vfxstat -t` command to verify that fax2 has been successfully removed by entering the following:

```
vfxstat –t
```

Setting a device to receive or not receive incoming faxes

By default, all fax devices are configured to answer incoming calls and therefore receive incoming faxes. You may want to selectively turn this feature on and off so that some of your fax devices are configured as send-only or receive-only.

To configure a device fax1 to not answer incoming calls and therefore not to receive incoming faxes, enter:

```
vfxadmin norecv fax1

Device fax1 now not receiving
```

To configure device fax1 to receive incoming faxes, enter:

```
vfxadmin recv fax1

Device fax1 now receiving
```

Classes

VSI-FAX can use either a single physical device or a group of devices called a class. For example, a class could be a group of devices dedicated to long distance calls, or a group of devices used only for high-volume fax requests. A class can only contain physical devices; classes cannot contain other classes. However, any device can be included in one or more classes.

When a fax is sent to a class, the fax will be routed to the first available modem.

Note: You must be logged in as root (Unix/Linux), Administrator (Windows), or user vsifax to change device or class parameters.

Tip: Assign each existing device to a class, then use the class name as the default destination when sending a fax from a program or script. This will allow you to add devices to this class in the future without having to rewrite your program or script. Any new devices will be immediately available to service fax requests as soon as you add it to the existing class.

Creating a new class

Note: You must be logged on as root (Unix/Linux), Administrator (Windows), or user vsifax to create a class. When creating a class, you must restart the scheduler before the change will take effect.

Command line

A class is created when the first device is added to it with the `vfxadmin class` command. Use the same command to add new devices to the class.

For example, to create a new class called sales and assign the fax1 device to it, enter:

vfxadmin class -a fax1 sales

The sales class is created, and the device fax1 is added to it.

Note: If the created class is not the default destination, you must specify it on the command line whenever you want to use it.

To confirm that the new class was properly created, enter:

```
vfxstat –t
```

Removing a device from a class

Note: If a class has no device assigned to it, it is automatically removed from the database.

Command line

To remove device fax1 from class sales, enter:

```
vfxadmin class -r fax1 sales
```

To confirm that the device was successfully deleted, enter:

```
vfxstat –t
```

A message then displays confirming the device was successfully deleted.

Enabling and disabling devices and classes

Enabling or disabling a device is a very high-level decision. When you disable a device, you are essentially taking it offline; it cannot send or receive any fax submissions until you re-enable it. This may be required if a phone line is out of service or is needed for a purpose other than faxing.

If the device is accepting requests but is disabled, a request can be submitted and queued, but it will not be sent until the device or class is re-enabled. You do not have to stop and restart the scheduler for the enable or disable command to take effect.

Command line

To enable a device, enter:

```
vfxadmin enable <device>
```

You can confirm that the change has taken effect with the `vfxstat -t` command. If the device has been enabled, the `vfxstat -a` output will show yes in the Ena column and Idle in the State column.

To disable a device, enter:

```
vfxadmin disable <device>
```

You can confirm that the change has taken effect with the `vfxstat -t` command. If the device has been disabled, the `vfxstat -t` output will show dwn in the Ena column and Not Running in the State columns that correspond to the newly disabled device.

Accepting and rejecting fax requests

Setting a device or class to accept or reject fax jobs is a way to fine tune device operation.

Important: You must be logged on as root (Unix/Linux), Administrator (Windows), or user vsifax to change accept status.

When a device or class is added to the system, by default its status is accepting.

When changing a device or class accept status, you are not required to stop and restart the scheduler for the command to take effect.

To set device fax2 to accept requests, enter:

```
vfxadmin accept fax2
```

To verify that fax2 is accepting, enter:

```
vfxstat –t
```

The `vfxadmin reject` command is used to set a fax modem so it will reject outgoing fax requests but accept incoming faxes. When changing accept status, you are not required to stop and restart the scheduler for the command to take effect.

To reject fax requests (where the `-r` option specifies a reason), enter:

```
vfxadmin reject -r "inbound only" fax2
```

The `-r` option allows you to specify a reason the device is rejecting requests. A device that is not accepting requests does not allow a fax request to be queued.

To verify that the device is rejecting requests, enter:

```
vfxstat –a
```

System parameters

System parameters allow you to configure SMTP and POP3 connectivity as well as define global default settings for any new devices added to your system.

Configuration file

System parameters are stored in the `$VSIFAX/lib/vsisrv.ini` file.

Company information

Company information provides a simple way to customize the default fax cover page templates so that your company or organization's name and address information automatically appears on your faxes.

Configuration file

Company information is stored in the `USERINFO` section of the `$VSIFAX/lib/vsisrv.ini` file.

Server side archiving of sent jobs

To turn on server side archiving of fax jobs, set the flags in each users profile. The flags to set are sar and arc. The sar flag cannot be set at the time a job is submitted. It is a user profile setting. The arc tag can be set when a job is submitted.

To set the sar and arc tags, the administrator can issue the command:

```
vfxadmin user -t arc=yes -t sar=yes <username>
```

on the fax server. They can also be set using the MMC Administration module. Right clicking on the job will offer the choice between viewing or resending.

Historical logs

Historical logs store detailed information about inbound and outbound faxes.

Important: The exact order of historical log tags is subject to change from release to release. Therefore, if you will be evaluating historical logs via a script, it is best that you explicitly search for a particular tag name rather than use a tag's current position in the log file. This will ensure that your scripts continue to work after product upgrades.

Outbound historical logs

Information about how outbound faxes were scheduled, sent and re-sent is stored in the faxreqs database. You can view this information using the `vfxolog` command line utility or the VSI MMC Fax Server Administration plug-in.

If you use the `vfxolog` command line utility, the following information is displayed for each outbound fax:

Reqid	Unique fax request ID number.
Submitted	Actual transmission time displays in MM/DD HH:MM format. For example: 03/28 16:17
npg/nps	Number of pages in the fax (`npg`) and number of pages re-sent (`nps`). Normally, these two numbers should be the same, indicating that all pages were successfully sent the first time. However, if a problem occurred during transmission, VSI-FAX will automatically re-send the affected pages.
Clientid	VSI-FAX user who submitted the fax request.
Phone number	Destination fax number.

Attmpt	Fax attempt status code. This is real-time status for the current fax attempt. Once the fax has been successfully sent, this entry is blank. Entries will be one of the fax attempt status codes Refer to your *VSI-FAX Reference Addendum* for additional information.
Result	Final fax request status. Entries will be one of the fax request status codes. Refer to your *VSI-FAX Reference Addendum* for additional information.
att	Attempt number. The total number of attempts to send each fax request is controlled by the retry strategy (page 93). An asterisk after the number indicates that this fax request is complete.

Tip: `vfxolog` typically only displays historical information for your outbound faxes. To view historical information for all outbound faxes, log in as a user with fax administration privileges (e.g., user vsifax), then enter your `vfxolog` command.

Inbound historical logs

Historical information about received (inbound) faxes is stored in the ilog database. You can view this information using the `vfxilog` command line utility or the VSI MMC Fax Server Administration plug-in.

▶▶ For more information, refer to “Microsoft Management Console (MMC)” on page 75.

If you use the `vfxilog` command line utility, the following information is displayed for each received fax:

Reqid	Unique fax request ID number.
origid	The original ID number for this fax if it was routed from another user.
clientid	The current owner of this fax. Unless you have administrative privledges, you will only see your faxes.

From	the TSI string of the sender, if it is a received fax, or the name of the person who routed it, if it is a routed fax.
Route time	The time the fax was received or routed.
pgs	The number of pages in the fax.
src	The source of this fax: • rcv means the fax was received • rte means the fax was routed
del	If the fax has been deleted, the reason the fax was deleted: • adl is auto delete • req is user request • fwd means the fax was forwarded • rnp means user RNP deleted it

Retry strategies

A retry strategy defines the number of times the fax server will try to re-send a fax and how long it will wait between each retry before the fax request is permanently removed from the active fax queue. Retry strategies are an important tool for managing the fax load on your server.

When you send a fax, the retry strategy used for that fax request is either the default retry strategy or another predefined retry strategy you explicitly assign to that fax request when you create the fax request or via your user profile.

Basic retry strategies

VSI-FAX provides several basic retry strategies that are optimized for common fax scenarios (e.g., local faxing, international faxing, etc.). You can easily define other custom retry strategies to meet your particular needs. This is accomplished by manually editing the `$VSIFAX/lib/retrys.lst` file.

The default `retrys.lst` file, installed with your VSI-FAX server, defines the following basic retry strategies:

```
default:5,5,5,5
three-attempts:5,5
four-attempts:5,5,5
international:5,5,10,10,60,60,120
```

The first retry strategy (default), is used whenever no retry strategy is explicitly specified. This retry strategy defines four retries, five minutes apart.

The three-attempts retry strategy defines two retries, five minutes apart. Notice that although this retry strategy is named three-attempts that it contains only two entries. This is because these two retries, combined with the initial send, constitutes three total attempts.

The four-attempts retry strategy is nearly identical to the three-attempts strategy except that an additional retry is added for a total of four send attempts (i.e., the initial send and three retries) five minutes apart.

Consider the last default retry strategy, international. This retry strategy is much more complex because successfully sending an international fax is much more susceptible to failure. Notice that it defines seven total retries and that the intervals between the retries gradually increase.

The assumption is that if the fax cannot be sent within the first 15 minutes (initial send and two retries, five minutes apart) that there may be a problem with the international phone lines.

The next two retries are ten minutes apart. If the fax server gets this far into the international retry strategy a total of 35 minutes has elapsed (15 minutes for the initial send and first two retries and 20 minutes for the third and fourth retries). At this point, it makes sense to let even more time elapse before the fax server retries this fax.

The next two retries are an hour (60 minutes) apart. The final retry is two hours from the previous retry. At this point, the fax server has tried to send the fax a total of eight times in four hours and 35 minutes.

Custom retry strategies

If you find that the basic retry strategies do not meet all your needs, you can easily define new retry strategies by manually editing the `$VSIFAX/lib/retrys.lst` file.

Each retry strategy is defined on a separate line. The format of a retry strategy entry is:

`<name>:<minutes>,<minutes>, …`

Where `<name>` is a user-defined name for this strategy, and each `<minutes>` entry is one retry. The actual number of minutes specified determines how long the fax server will wait before executing that retry.

Note: If a retry strategy is defined without any `<minutes>` entries, the fax server will interpret it as no retries (i.e., initial send only).

Examples

To define a retry strategy called 24-hours that will re-send a fax nine times during a twenty-four period with successively longer wait times, enter:

```
24-hours:5,10,15,30,60,120,120,360,720
```

To define a retry strategy with no re-sends (i.e., initial send only), enter:

```
no-retries:
```

Dial string conversion

"What you see is what you get" is rarely true for telephone numbers. Almost without thinking we include dashes, spaces and parentheses in typed and written telephone numbers. When we manually dial a telephone number, however, we know that we must remove these extra characters.

When entering a fax telephone number into a VSI-FAX client program, users will often use unneeded characters such as dashes, leave out characters that may be required to access long distance or an outside line, etc. Because of this, the VSI-FAX software must analyze each fax request to determine the exact telephone number the modem needs to dial. The process of analyzing and modifying an entered telephone number by VSI-FAX is called dial string conversion.

Dial string conversion is performed when a fax request is queued. Using information in the `vsisrv.ini` file and the `dialcode.lst` file, or an optional user-defined conversion program, the dial string conversion process evaluates the dial string. Then based on whether it is internal, local, long distance, or international, it determines whether extraneous characters exist, decides whether long-distance carrier access code should be used, and adds or subtracts characters as needed. This section explains what dial string conversion options are available in VSI-FAX and how to use each option.

Preliminary dial string conversion

If VSI-FAX is interfaced with another application program that performs the dial string conversion, you can disable the VSI-FAX dial string conversion function by setting DialConvert to off in the vsisrv.ini file. However, steps 2 through 4 will be performed on all dial strings, even if DialConvert is set to off in the vsisrv.ini file.

If the DialcvtProgram entry in the vsisrv.ini file is set to a program name, the dial string conversion will be performed by that program. None of the other dial string conversions described here will take place. If the DialcvtProgram entry is blank, the following dial string conversion will be performed:

1. Any dial string that contains an @ followed by an Internet domain name will be passed to the SendMail FIM and be sent by email.
2. All dashes, spaces, periods and left and right parentheses are removed from the dial string.

3. Any dial string that begins with # will be stripped of the leading # but will not be processed any further by the dial string conversion function.
4. Any characters following an @ character will be processed as a post dial string. When a post dial string is encountered, the modem will wait for five seconds of silence before dialing the characters. Note that this does not affect an email address, which will have been passed to the SendMail FIM and will therefore not reach this stage of processing.
5. Any characters following a comma, @, W, or ! will be treated as a separate dial sequence. (As in step 5 above, email addresses are not affected.)
6. Any characters contained within square brackets [ ] will be considered to be a credit card number. No conversion will be performed on these characters and they will not be used by the dial string conversion function to categorize the call as internal, international, etc. The brackets, however, will be removed.
7. If the dial string begins with the value of the `IntlAccess` entry (international access code) in the `vsisrv.ini` file, no further dial string conversion will be performed.

Intermediate dial string conversion

The next part of dial string conversion involves categorizing it as internal, local, long distance, or international based on the dial string variables stored in the `vsisrv.ini` file.

Note: By default, the dial string variables are set to normal U.S. telephone requirements. If your local telephone system does not follow U.S. standards, reset these values.

Dial string variables are stored in the `DEVICE` section of the `vsisrv.ini`. server configuration file. The fax administrator should determine the appropriate settings for the dial string variables and edit the `vsisrv.ini` file in the `$VSIFAX/lib` directory, as needed.

The dial string variables in the `vsisrv.ini` file are:

Entry	Default	Description
area-code		Area code for the phone line used by this device.
country-code	`1`	The country code for the phone line used by this device.
dial-convert	`ON`	Set `OFF` to disable any dial string conversion.
dial-cvt-program		The name of an external program that will output to standard output the results of its conversion. Its output is used to create the converted dial string. This program is called with the following arguments: `-p <prefix>` Dial `<prefix>`, if defined. `-s <suffix>` Dial `<suffix>`, if defined. `-a <code>` Area `<code>`, if defined. `<number>` Dial string to convert.
dial-prefix		A prefix, such as “9”, or “8,” to be prepended to a dial string before sending. This is usually used to access outside lines.
dial-suffix		Suffix appended to a dial string before sending.
intl-access	`011`	The dial prefix needed to make international calls.
intl-prefix		An alternate prefix (instead of `LongDist-Prefix`) for dialing an international call.
intl-suffix		An alternate suffix for dialing an international call.
local-num-len	`7`	The number of digits in the local number for the phone line used by this device.

Entry	Default	Description
long-dist-access	`1`	Dial string needed to make long distance calls.
long-dist-prefix		Prefix prepended to a dial string (instead of `DialPrefix`) if the number is determined to be a long distance number. This is usually used for phone systems that use access codes for long distance calls.
long-dist-suffix		Suffix appended to a dial string (but before `DialSuffix`) if the number is determined to be a long distance number. This is usually used for phone systems that use account numbers for toll calls.

Assuming that D is the number of digits in the dial string, the following logic is used to determine whether it represents an internal, local, long distance, or international number:

If `D < LocalNumLen`, then the dial string is an internal telephone extension.

If `D = LocalNumLen`, then the dial string is a local telephone number.

If `LocalNumLen < D < LocalNumLen + AreaCode`, then the dial string is a long distance telephone number.

If `LocalNumLen + AreaCode < D`, then the dial string is an international telephone number.

Once it is determined which type of telephone number the dial string represents, dial string variables are prepended or appended to the dial string as shown on this chart.

LONG DIST PREFIX	DIAL PREFIX	INTL PREFIX	INTL ACCESS	LONG DIST ACCESS	DIAL STRING	DIAL SUFFIX	INTL SUFFIX	LONG DIST SUFFIX
					Intl.			
	X				Loc.	X		
X				X	Non-Loc.			X
		X	X		Intl.		X	

For example, if the dial string is determined to be a long distance number, the dial string conversion function will prepend the values of `LongDistPre-`

fix and LongDistAccess to it and append the value of LongDist-Suffix to it.

Final dial string conversion

In addition to the dial string conversion described so far in this manual, supplementary dial string conversion can be performed by using the dialcode.lst file. The purpose of the dialcode.lst file is to accommodate the dynamic telephone service standards being supplied by providers in the United States. Although these additional dial string conversion features were developed to meet the needs of VSI-FAX users in the United States and the different levels of phone service available from providers in different U.S. states, they may also be appropriate for use by any users in similar environments.

Use of the dialcode.lst file is optional. As installed, the dialcode.lst file is located in the $VSIFAX/lib directory. It contains sample entries that have been commented out and are therefore not active. To make use of the special dial string conversion features that can be implemented with the dialcode.lst file, edit this ASCII file with a standard text editor.

Testing your dial string conversion

Esker provides a dial string conversion testing program called vdialcvt. You can use this program to test your dial string conversion setup and determine whether it is correct.

Once you have configured the variables in vsisrv.ini to perform the desired dial string conversion, test the conversion of several sample dial strings with vdialcvt.

Note: Your exact and complete dial string conversion setup is emulated by vdialcvt, including both the vsisrv.ini settings and any entries in the dialcode.lst file. If DialConvert is set to off in the vsisrv.ini file, any dial strings input to vdialcvt will remain unconverted. If DialcvtProgram is set to a custom program name in the vsisrv.ini file, vdialcvt will run that program.

Custom dial string conversion

All dial string conversion can be disabled by setting the `DialConvert` option `off` in the `vsisrv.ini` file.

If you prefer not to convert dial strings with any of the functions provided with the VSI-FAX software, you can write your own dial string conversion program. If `DialcvtProgram` is set to this program name in the `vsisrv.ini` file, the dial string conversion function, provided by VSI-FAX, will be completely disabled.

Individual users can specify a Prefix and Suffix that will be used in the conversion of any dial strings in any fax request from that user. This prefix and suffix can be used for user-specific information such a credit card number or account number. The individual Prefix and Suffix can be set either through one of the VSI-FAX user interface programs or by editing the user's `vsifax.ini` file, located in the user's `$HOME/.vsifax` directory on the fax server.

These are sample entries in the `vsifax.ini` file, specifying individual Prefix and Suffix settings:

```
[SENDPARAMS]
Prefix=
Suffix=1234
```

Fax routing

There are three methods for routing received fax transmissions.

- Print received faxes on a centrally located printer and manually hand deliver them to the recipients
- Automatically or manually route received faxes to each user's fax box directory
- Automatically or manually route received faxes to email addresses

---

Note: By default, received faxes are routed to the VSI-FAX administrator's fax queue, `$VSIFAX/faxq/vsifax`.

Specifying a fax box

A received fax is always placed in a fax box, which is either the default fax box for that device or class, or a user fax box specified by Direct Inward Dial (DID) or Dual Tone Multi-Frequency (DTMF) routing. If a fax box is not specified for a device, `vsifax` is the default fax box.

Command line

The `vfxadmin device` command is used to specify a fax box for a device.

To assign a fax box to a fax device, enter:

```
vfxadmin device -u -b <user> device
```

For example, to assign device fax2 to store its received faxes in the sales fax box enter:

```
vfxadmin device -u -b sales fax2
```

To assign a fax box called legal to a fax device called fax1, so that any faxes received on fax1 will automatically be routed to legal, enter:

```
vfxadmin device -u -b legal fax1
```

Note: The previous example assumes that the legal fax box has been previously created and that fax1 is a valid device.

Departmental routing

Often, faxes need to be routed for an entire department rather than for an individual user. To do this, you must create a department in the fax server user database.

Command line

To create a department for general fax distribution, enter:

```
vfxadmin user -d -n "<descriptive_name>" <dept_name>
```

For example, to create a department called custs for general fax distribution, with the descriptive name Customer Service, enter:

```
vfxadmin user -d -n "Customer Service" custs
```

Note: If you omit the `-L` option from the `vfxadmin user` command, the department will not use a user license.

After adding to the user database you can confirm the addition by entering:

```
vfxadmin user -l
```

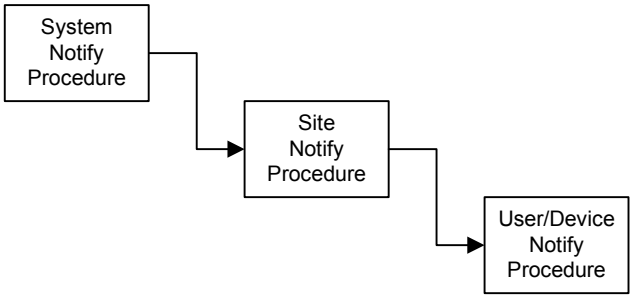
Event notify procedures

Event notify procedures are scripts that trigger various system actions whenever certain events take place. This entire notification mechanism is designed to be open and easily customized so that you can optimize each VSI-FAX system to your particular needs.

This chapter begins with a general functional overview of event notify procedures. Flow diagrams show the various notification points in the system and the various notify procedures run at each of these points. Immediately following the functional overview is detailed information about how to write your own custom notify procedures.

Functional overview

At each different notification point in the system, VSI-FAX executes a hierarchy of notify procedures as shown in this figure:



Typical Notify Procedure Execution Hierarchy

System notify procedures

System notify procedures are always performed first and automatically. Furthermore, although these scripts are found in the VSI-FAX directory structure, they are not intended to be modified. If you do modify these system notify scripts, you will lose your modifications the next time you upgrade your VSI-FAX system.

Site notify procedures

If they exist, site notify procedures are performed after system notify procedures but before any user or device notify procedures. Site notify procedures are used to customize a particular notification point on a site-wide basis.

Site notify procedures are not supplied with the default VSI-FAX system—you must create them if you want to use them, preventing unnecessary processing by the fax server.

▶▶ Refer to “Custom notify procedures” on page 110 for additional information.

User and device notify procedures

If they exist, user and device notify procedures provide an additional level of granularity and power. Instead of being limited to customizing a particular notification point for an entire site, you can also customize it on a user-by-user or device-by-device basis for sent and received faxes, respectively.

As with site notify procedures, user and device are not supplied with the default VSI-FAX system—you must create them if you want to use them.

▶▶ Refer to “Custom notify procedures” on page 110 for additional information.

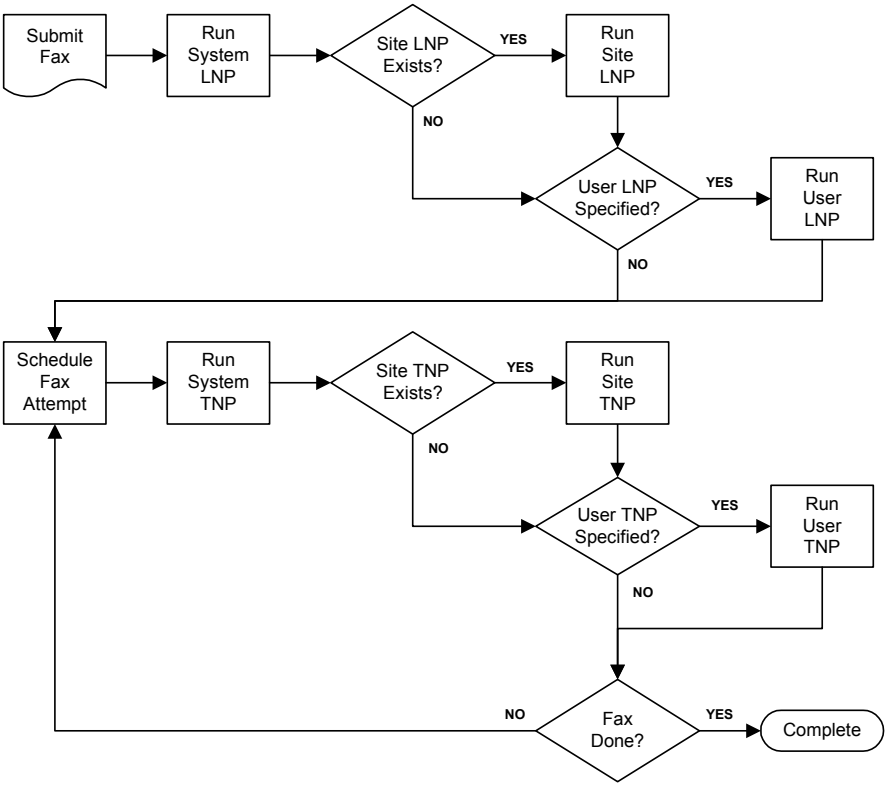
Send notification

The send notification mechanism is specialized for two basic scenarios:

- Normal (non-group) faxing
- Group faxing

This specialization is required because each group fax is split up into individual fax requests by the scheduler, one fax request for each recipient in the group. Normal (non-group) faxes use a single fax request for the entire fax job.

This figure shows the notification mechanism for normal sent faxes:



Normal (Non-Group) Send Notification Flow Diagram

Launch notify procedures (LNPs)

Immediately after a fax is submitted to the system, one or more Launch Notify Procedures (LNPs) are run. LNPs run before the fax is sent to the scheduler (before any fax attempts are initiated).

Notice that this area of the diagram illustrates the hierarchical behavior that is typical of all notify points in the system:

- The system LNP is always run without decision (automatically).

- Next, the system looks for a site LNP. If it finds one, it runs it.
- Similarly, the system checks the fax command for a user LNP. If a user LNP was specified, the system runs it.

Note: User LNPs must be specified on a fax-by-fax basis. This is typically done via the `-t lnp=<LNP_file>` tag. Similar `vfx` tags are also provided for other user notify procedures.

▶▶ Refer to your *VSI-FAX Reference Addendum* for additional information about using `vfx` tags to run user notify procedures.

The LNP notification point is the same for both normal (non-group) and group faxes.

Transmit notify procedures (TNPs)

Transmit Notify Procedures (TNPs) are typically only run for normal (non-group) faxes. As the *Normal (Non-Group) Send Notification Flow Diagram* (page 105) shows, they a run after each fax attempt until the fax job is done. Again, note the hierarchical behavior: the system TNP is automatically run and if the system finds site or user TNPs, it runs them in that order.

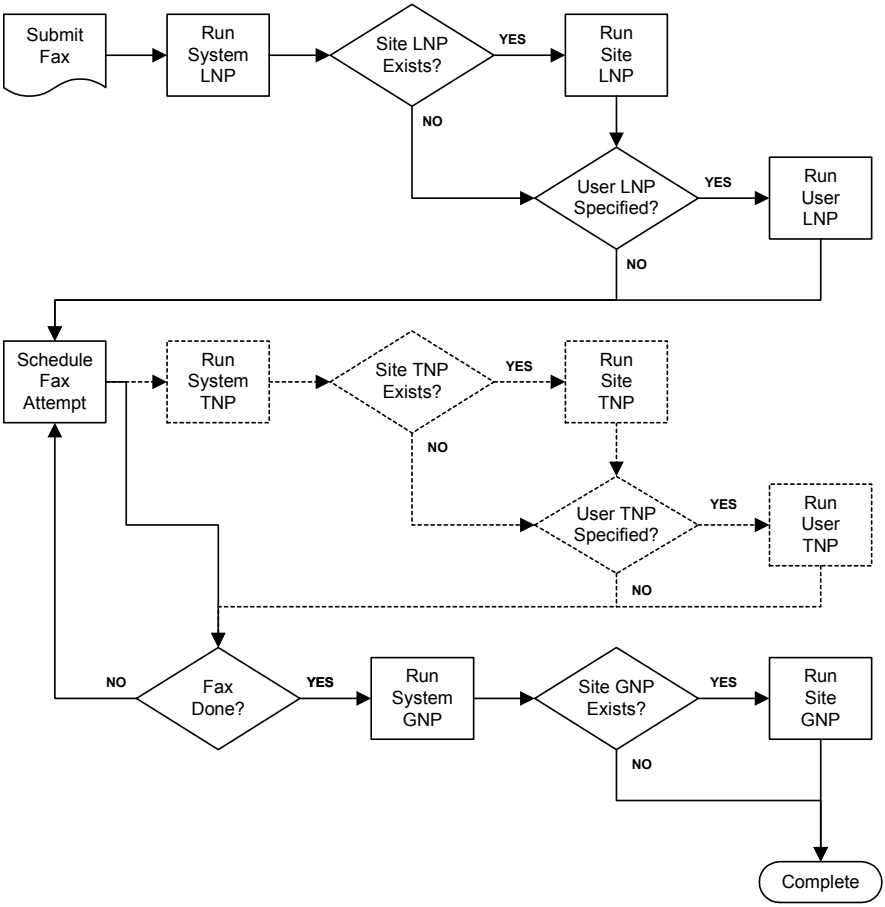
Look at the final decision block, Fax Done? This can mean one of two things:

- The fax was successfully sent.
- The maximum number of retries was attempted but the fax was not successfully sent.

Notice also that if the fax job is not done, that it returns to the scheduler for a retry. This loop continues until the fax is successfully sent or until the maximum number of retries has been attempted (regardless of outcome).

For this reason, most site and user TNPs contain logic that generates one response for a successful fax attempt (i.e., fax job completes successfully), another response for an unsuccessful fax attempt and yet another response for a fax job completing unsuccessfully.

This figure shows the notification mechanism for group sent faxes:



Group Send Notification Flow Diagram

The first part of this flow diagram is identical to the normal (non-group) fax send flow diagram. Immediately after a fax is submitted to the system, the system LNP is automatically run and if the system finds site or user LNPs, it runs them in that order.

When a group fax reaches the Schedule Fax Attempt block, it is split into individual fax requests, one for each recipient in the group. From this point forward, the notification mechanism for group faxes is different than the mechanism for normal (non-group) faxes. The criterion for the Fax Done

decision block is whether or not every fax in the group fax job has either reached the maximum number of retries or been successfully sent.

Notice that the TNP blocks are shown in dashed lines. This is because the default behavior is to not run TNPs against group fax jobs. The reason for this is that most TNPs email status for all failed fax attempts and a large group job could generate lots of email. However, you can configure your fax server to run TNPs against group fax jobs by adding the following setting the `VFX-SCHED` section of the `vsisrv.ini` configuration file:

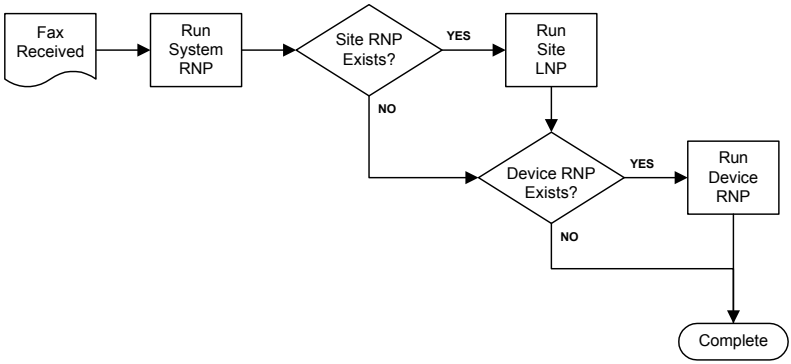
```
group-tnp = YES
```

Group notify procedures (GNPs)

Group Notify Procedures (GNPs) are only run once after the entire fax job is done (not after each fax attempt). In other words, this notification point can only provide notification for the entire group fax job (successful or unsuccessful), it cannot provide notification of each individual fax attempt.

Receive notification

This figure shows the notification mechanism for received faxes:



Receive Notification Flow Diagram

As you can see from the flow diagram, the receive notification mechanism is much simpler than either of the send notification mechanisms. The receive notification mechanism features a single notification point and is not iterative.

Note: When a fax is routed to a user, any RNP specified in that user's profile will be run.

Immediately after a fax is received by the system, the system Receive Notify Procedures (RNP) is automatically run and if the system finds site or device RNPs, it runs them in that order.

Receive notify procedures (RNPs)

Receive Notify Procedures (RNPs) notify procedures are very similar to other notify procedures. The primary difference is that while the send notification mechanism provides a user level of execution (for customizing a notification point on a user-by-user basis), the receive notification mechanism implements a device level of execution (for customizing a notification point on a device-by-device basis).

This is done because when a fax is received, the system does not necessarily know which VSI-FAX user the fax is intended for. However, the system always knows which device answered the telephone call and received the fax.

Another major difference between user notify procedures and device RNPs is that while user notify procedures are embedded in the `vfx` (send fax) command and must be specified for each fax request (they are not permanent), device RNPs are assigned to each device via the `vfxadmin device -P <RNP>` command and this assignment is permanent.

Start, stop, and fail notification

Two special notify procedures, `sys-start` and `sys-stop`, provide notification whenever the scheduler is started or stopped, respectively. A third notification procedure, `sys-devfail`, provides notification any time a physical fax device fails. A fourth notification procedure, `sys-autofail`, provides notification anytime a request in an autosend directory fails.

These notification mechanisms are much simpler than send and receive notifications. Only the system notify procedures, mentioned in the previous paragraph, can be run. Site, user, and device notify procedures are not available.

The sys-start, sys-stop, and sys-devfail notify procedures are not provided with the default VSI-FAX installation. You must create them according the guidelines described in *Custom notify procedures* (page 110) and place them in the $VSIFAX/lib/enp directory.

Refer to these topics for additional information and sample scripts:

- "Custom notify procedures" on page 110
- "Start and stop notify procedures" on page 117
- "Fail notify procedures" on page 120

Custom notify procedures

Event notify procedures are typically Tool Command Language (Tcl) or shell scripts run by the scheduler at a particular notification point.

All notify procedures must be located in the $VSIFAX/lib/enp directory. This directory is the only place the fax server looks for notify procedures. In addition to any site, user, or device notify procedures you place there, this directory also contains the system LNP, TNP, GNP, and RNP scripts (lnp-system, tnp-system, gnp-system, and rnp-system).

Important: Esker strongly recommends that you do not modify the system LNP, TNP, GNP, and RNP scripts (lnp-system, tnp-system, gnp-system, and rnp-system). Improper modifications can cause unpredictable system behavior. Furthermore, any modifications to these scripts will be lost the next time you upgrade your VSI-FAX system.

Notify procedures are named as follows:

<type>-<name>.<ext>

Where <type> is lnp, tnp, gnp, rnp, or sys; <name> is a short descriptive name for the notify procedure and <ext> is tcl, sh or other file extension associated with a command interpreter in the notify.lst file.

The following rules apply to <ext> in the naming convention:

- If there is no extension, it is assumed to be a simple executable.
- If the extension is .sh, the script is run using the shell interpreter.
- If the extension is .tcl, the script is run using the Tcl interpreter.

Note: VSI-FAX installs a Tcl interpreter with all fax server installations. Therefore, Tcl scripts will run on all supported platforms (Unix, Linux and Windows NT/2000). However, shell scripts normally only run on Unix and Linux. If you want to run shell scripts on Windows NT/2000, you must install a third-party shell interpreter, such as MKS Toolkit.

- If the extension is anything else, the fax server looks in the `$VSIFAX/lib/notify.lst` file for information about how to process this file.

For example, in order for the fax server to run `tnp-site.zz`, there must be a line in `notify.lst` like:

```
"zz; /<interpreter>/zz"
```

Where `zz` is an alias in the `notify.lst` file that points to the full path and file name of the command `<interpreter>` you want to use for that file extension.

Launch notify procedures (LNPs)

Site or user LNPs can be used to archive faxes, transmit accounting codes, or for fax request control.

When an LNP is run, the fax request file will always be available to the procedure. This file is `$VSIFAX/spool/temp/f-$REQID.tif` for a regular request or `$VSIFAX/spool/temp/gf-$GRPID.tif` for a group request.

Syntax

Site and user LNPs are called directly from the system LNP, which passes the following arguments to the site and user LNPs:

`$1`	Unique request-ID for this fax. Value is zero (`0`) for group fax requests.
`$2`	VSI-FAX user ID who submitted the fax request.
`$3`	Notification email address specified by the sender.
`$4`	Time this fax attempt was submitted.

$5	Notification mode specified by the sender. Values are: • none Never notify • ok Notify on success • fail Notify on failure • both Always notify • each Notify on each attempt
$6	Unique group fax request ID. Value is zero (0) for normal (non-group) fax requests.
$7	If a normal (non-group) fax, total number of pages in this fax request (including cover pages). If a group fax, number of recipients in the group.
$8	Recipient's fax number. Value is a null string ("") for group faxes.
$9	Flag indicating whether Least Cost Routing (LCR) is enabled (1) or disabled (0).

Examples

This shell script archives all regular fax requests to the /usr/fax/archive/reg directory and archives all group requests to the /usr/fax/archive/grp directory:

```
#!/bin/sh

# lnp-site.sh

REG_DIR=/usr/fax/archive/reg
GRP_DIR=/usr/fax/archive/grp

REQID=$1
GRPID=$6

if [ $GRPID -eq 0 ]

then
FILE=$VSIFAX/spool/temp/f-$REQID.tif
cp $FILE $REG_DIR/$REQID.tif

else
```

```
FILE=$VSIFAX/spool/temp/gf-$GRPID.tif
cp $FILE $GRP_DIR/$GRPID.tif

fi

exit 0
```

This shell script limits any group request to a maximum of 100 members:

```
#!/bin/sh

# lnp-site.sh
GRPID=$6
NUM=$7
if [ $GRPID -ne 0 ]
then
if [ $NUM -gt 100 ]
then
MAILADDR=$3
echo "Group job GRPID terminated:" \
"too many members" |
mail $MAILADDR
exit 1
fi
fi
exit 0
```

Transmit notify procedures (TNPs)

TNPs are often used for accounting or user notification of fax request status. Although the file associated with a request may not be available when a TNP is run, the log file entry for that fax request is available.

Syntax

Site and user TNPs are called directly from the system TNP, which passes the following arguments to the site and user TNPs:

`$1`	Unique request-ID for this fax.
`$2`	VSI-FAX user ID who submitted the fax request.
`$3`	Notification email address specified by the sender.
`$4`	Time this fax attempt was submitted.

$5	Notification mode specified by the sender. Values are: • none Never notify • ok Notify on success • fail Notify on failure • both Always notify • each Notify on each attempt
$6	Unique group fax request ID. Value is zero (0) for normal (non-group) fax requests.
$7	Total number of pages in this fax request, including cover pages.
$8	Recipient's fax number.
$9	Fax attempt status code, in string format.
$10	Result status of this request.
$11	Attempt number. Zero (0) if fax request was canceled or otherwise failed during submission.
$12	Flag indicating whether the fax request is complete (TRUE) or not complete (FALSE).

Examples

This shell script logs all fax attempts that actually use phone time to an accounting file. The script assumes that all users put an account number in the tg1 user tag.

```
#!/bin/sh

# tnp-site.sh
REQID=$1
eval `$VSIFAX/lbin/vfaxreq -F eval $REQID`
if [ $nat -gt 0 ]# nat is >0 if an attempt was made
then
ACCFILE=/usr/vsifax/fax.log
# accountno:request-id:time:elapsed:phonenum
echo "$tg1:$req:$stm:$ela:$tfn" >>$ACCFILE
fi
exit 0
```

Group notify procedures (GNPs)

Syntax

Site and user GNPs are called directly from the system GNP. The system GNP passes the following arguments to the site and user GNPs:

`$1`	Unique request-ID for this fax. Same as Group-ID.
`$2`	VSI-FAX user ID who submitted the fax request.
`$3`	Notification email address specified by the sender.
`$4`	Time this fax attempt was submitted.
`$5`	Notification mode specified by the sender. Values are: • `none` Never notify • `ok` Notify on success • `fail` Notify on failure • `both` Always notify • `each` Notify on each attempt
`$6`	Unique group fax request ID. Same as Request-ID
`$7`	Total number of recipients (members) in this group.
`$8`	Total number of recipient (member) faxes successfully sent.
`$9`	Total number of recipient (member) faxes that failed.
`$10`	Any user GNP specified.

Examples

This shell script generates a verbose log file for a group fax job:

```
#!/bin/sh
# gnp-site.sh
#

REQID="$1"
CLIENTID="$2"
MAILADDR="$3"
SENDTIME="$4"
NOTIFY="$5"
GRPID="$6"
```

```
NUM_MEMS="$7"
NUM_SENT="$8"
NUM_FAIL="$9"
shift
USER_GNP="$9"

# ------------------------------------------------------
# generate a status log for the entire group, and write to
file

"$VSIFAX/bin/vfxstat" g-$GRPID > /tmp/GroupFax.log
echo "------------------------  --------------------" >>
/tmp/GroupFax.log
echo " " >> /tmp/GroupFax.log
"$VSIFAX/bin/vfxolog" -t gse=$GRPID >> /tmp/GroupFax.log

exit 0
```

Receive notify procedures (RNPs)

Syntax

Site and device RNPs are called directly from the system RNP, which passes the following arguments to the site and user GNPs:

Tip: If you require additional information not present in these parameters, the `vfxilog` command can be used to access other information about this fax request from the inbound fax log database.

`$1`	Full path and file name of the received fax file.
`$2`	Set to vsifax if this was received; set to originating user ID if this fax is being routed to another user.
`$3`	Name of the fax device or class that received this fax.
`$4`	Inbox specified for this device or class or the VSI-FAX user who will receive the routed fax.
`$5`	Status of the fax. This controls RNP behavior. Values are: • `received` Run this RNP as soon as a fax is received (prior to routing) • `routed` Run this RNP whenever a fax is routed to a user.

Examples

This shell script automatically removes the header line from received faxes:

```
# rnp-clrhdr.sh
FILE=$1
vtifftool clear -c -o $FILE $FILE
exit 0
```

To associate a device rnp script with a fax destiation, use the following syntax:

```
vfxadmin device -u -P <partofscriptname> <faxdestination>
```

Start and stop notify procedures

Syntax

These arguments are passed to `sys-start` and `sys-stop`.

`$1` is the Numerical Process ID (PID) of the scheduler.

Examples

This is a sample start Tcl script (`sys-start.tcl`) that logs each time the fax server is started and what numerical process ID (PID) is assigned to it:

```
# Filename: sys-start.tcl
# Description: script that is run startup of the fax
scheduler.
#-------------------------------------------------
global argv argc env

#-------------------------------------------------
# Get all arguments and setup environment
set PID [lindex $argv 0 ]
set f [open $VSIFAX/spool/logs/sys-start.log a+]

#-------------------------------------------------
# Update log file
puts $f "The fax scheduler was started at: "
puts $f "The process ID is $PID"

exit 0
```

This is a sample start shell script (`sys-start.sh`) that logs each time the fax server is started and what numerical process ID (PID) is assigned to it:

```
#!/bin/sh
#
# Filename: sys-start.sh
# Description: Script that is run at startup of the fax
scheduler

# -----------------------------------------------------
# Get arguments
PID="$1"
LOG="$VSIFAX/spool/logs/sys-start.log"
# -----------------------------------------------------
# Update log file
echo "The fax scheduler was started at: `date`" > $LOG
echo "The process ID is $PID" > $LOG
# -----------------------------------------------------
#
exit 0
```

This is a sample stop Tcl script (`sys-stop.tcl`) that sends an email message to “anon@mycompany.com” every time the fax server is stopped:

```
#
# Filename: sys-stop.tcl
# Description: script that is at shutdown of scheduler
```

```
#-----------------------------------------------------
global argv argc env
#-----------------------------------------------------
# Get all arguments and setup environment
set PID [lindex $argv 0 ]
set VSIFAX $env(VSIFAX)
set EMAIL "anon@mycompany.com"
set SUBJECT "Warning from Esker"
set TMP_DIR "$VSIFAX/spool/temp"
set f [open $VSIFAX/spool/logs/sys-stop.log w]
#-----------------------------------------------------
#
# Update log file
puts $f "The fax scheduler was stopped"
# Email notification to specified mail address
catch { [ exec "$VSIFAX/lbin/vmime -t \
-o$VSIFAX/spool/temp/stopwarn \
$VSIFAX/spool/logs/sys-stop.log" ] }
catch { [ exec "$VSIFAX/lbin/vmail" "$EMAIL" \
"$VSIFAX/spool/temp/stopwarn" ] }
#
exit 0
```

This is a sample stop shell script (`sys-stop.sh`) that sends an email message to “anon@mycompany.com” every time the fax server is stopped:

```
#!/bin/sh
#
# Filename: sys-stop.sh
# Description: script that is run at shutdown of sched-
uler

#-------------------------------------------------------
# Get arguments
PID="$1"
LOG="$VSIFAX/spool/logs/sys-stop.log"
EMAIL="anon@mycompany.com"
SUBJECT="Warning from Esker"
# -------------------------------------------------------
# Update log file
echo "The fax scheduler was stopped at: `date`" > $LOG
# Email notification to specified mail address
$VSIFAX/lbin/vmime -t -s "$SUBJECT" \
-o $VSIFAX/spool/temp/stopwarn \
```

```
$VSIFAX/spool/logs/sys-stop.log
$VSIFAX/lbin/vmail $EMAIL $VSIFAX/spool/temp/stopwarn
rm $VSIFAX/spool/temp/stopwarn
# ------------------------------------------------------
#
exit 0
```

Fail notify procedures

Syntax

These arguments are passed to `sys-devfail`:

`$1`	Device name.
`$2`	Reason for the failure.

Examples

This is a sample device fail Tcl script (`sys-devfail.tcl`) that automatically re-enables any failed device and records the incident to a log file:

```
# Tcl script that runs when a fax device has failed.
#-----------------------------------------------------
global argv argc env
#-----------------------------------------------------
# Get all arguments and setup environment
set DEVICE [lindex $argv 0 ]
set REASON [lindex $argv 1 ]
set VSIFAX $env(VSIFAX)
set TMP_DIR "$VSIFAX/spool/temp"
set f [open $VSIFAX/spool/logs/devfail.log a+]
#-----------------------------------------------------
#
# Issue command to re-enable fax device
catch { [ exec "$VSIFAX/bin/vfxadmin enable" $DEVICE ] }
#
# Update log file
puts $f "Device $DEVICE failed due to $REASON"

exit 0
```

This is a sample device fail shell script (`sys-devfail.sh`) that automatically re-enables any failed device and records the incident to a log file:

```
#!/bin/sh
# Description:
# -----------------------------------------------------
#exec > $VSIFAX/spool/logs/sysdev.log ; set -x
#-----------------------------------------------------
# Get arguments
DEST=$1
CAUSE=$2
LOG="$VSIFAX/spool/logs/devfail.log"
#
# Issue the command to re-enable fax device.
$VSIFAX/bin/vfxadmin enable "$DEST"
#
# Update log file
echo "Device $DEST was restarted due to $CAUSE" >> $LOG
#
exit 0
```

Customizing notification email messages

You can easily customize email messages sent at various points in the notification mechanism using template files.

For more information, refer to “Template files” on page 149.

Simply create a template file, place it in `$VSIFAX/lib/templates` directory, then associate it with one of the following notification points in a user profile or by directly setting the appropriate tag in the user database.

The following table shows which notification messages can be customized and which user tags must be set to accomplish that.

Notification Message	User Database Tag
Receive notification	vtp
Routed notification	rtp
Successful send notification	sto
Failed send notification	stn
Group send notification	stg

LDAP setup and configuration

VSI-FAX supports the use of Lightweight Directory Access Protocol (LDAP) directories to retrieve fax recipient (i.e., to) information. However, before you can send a fax using LDAP data, you must configure various VSI-FAX settings that control how to connect to the LDAP server and map the information in the LDAP directory so VSI-FAX knows where to find certain essential fax information (e.g., fax number, recipient name, etc.) at send time.

Note: Esker does not provide LDAP software. VSI-FAX simply has the capability of connecting to your LDAP server and retrieving information from your LDAP directory.

Fundamentals

Lightweight Directory Access Protocol (LDAP) is an open standard protocol for accessing information services. Essentially, LDAP is a directory service that is structured and behaves like a database.

LDAP directories are based on client/server models and use regular TCP/IP networking. LDAP servers typically listen on port 389. Client programs that can access LDAP directories include Microsoft Outlook, Lotus Notes, Netscape Communicator and many others.

LDAP Documentation

LDAP is an open standard that is documented in various Request For Comments (RFC) white papers. These RFCs are available from many sources on the World Wide Web. Currently, the OpenLDAP Foundation (www.openLDAP.org) is an excellent source of online LDAP documentation.

Basic LDAP structure and organization

LDAP directories contain records. These records contain various attributes, which are used to store information. Consider the following simplified LDAP record:

```
dn: Jim Smith, o=Acme Corp.
givenName: Jim
sn: Smith
mail: jsmith@acme.com
c: US
```

These are the attributes stored in this record:

Attribute	Description
c	Country
dn	Distinguished name. This attribute always stores a unique indentifier for that LDAP record (no two records in the same LDAP directory can have the same dn value).
givenName	Given (first name)
mail	Email address
o	Organization
sn	Surname (last name)

Note: The attributes shown in this example are common to most LDAP directories.

Attribute names (dn, cn, givenName, etc.) are loosely defined in various RFCs. Although attribute names are defined in RFCs, the standard is very informal. Therefore, each LDAP server may use slightly different attribute names to store data.

One of the setup tasks for using an LDAP directory with VSI-FAX will be to map certain essential LDAP attributes (e.g., the attributes for fax number, recipient name, etc.) to VSI-FAX tags so that VSI-FAX can find and use it at send time. This mapping information is stored in the datasource database.

Important: Because attribute names may differ among LDAP servers, it is beyond the scope of this manual to provide exact mapping parameters that will work with every LDAP directory. Instead, you must list the attributes in your LDAP directory and determine which ones store essential fax information. Consult your LDAP administrator to obtain a list of attributes used on your LDAP server.

Sample LDAP attribute mappings

The following tables shows some sample LDAP attribute mappings. These settings may or may not be compatible with your LDAP directory. They should only be considered as examples and possible initial settings for your LDAP directory.

VSI-FAX Info	LDAP Attribute Name		
	Microsoft Exchange	**Lotus Domino**	**ldap.vsi.com**
First name	givenName	givenName	givenname
Last name	sn	sn	sn
Company	Company	CompanyName	company
Phone	Phone	telephoneNumber	phone
Fax	facsimileTelephone-Number	facsimileTelephone-Number	facsimiletelephone-number
Email	mail	mail	mail
Address 1	postalAddress	OfficeStreetAddress	postaladdress
Address 2	l	L	l
Address 3	st	st	st
Country	co	c	co

General LDAP notes

Search Base	LDAP directories are arranged in a tree-like manner. The search base is used to specify which branch of the tree to start searching on. For example, using a search base of c=US starts searching on the branch for entries in the US. If no search base is specified, the search will start looking globally (from the top-most branch), which could take a long time.
Scope	The values for scope define whether a search can descend into other branches of the LDAP tree. A value of base means the search will only search the current branch. A value of one level allows descending down only one level. A value of subtree allows the search to descend into any branches that exist below the starting point.
Authentication	Most LDAP servers allow anonymous read-only access. If an LDAP server requires authentication, your distinguished name (dn) and password can be specified in the Directory Properties User ID and Password fields, respectively.

▸▸ See “Modifying LDAP directory settings” on page 129 for additional information.

A Word About Administration Techniques

The only way to setup and configure VSI-FAX to use an LDAP directory is via VSI MMC Fax Server Administration—these features and functions are not available from the command line.

Ensure that you have the VSI MMC Fax Server Administration software installed on a Windows computer with network access to the fax server before beginning LDAP setup and configuration.

Adding a new LDAP directory

1. Start Microsoft Management Console (MMC) and load the VSI MMC Fax Administration snap-in.
2. Connect to the fax server by selecting the desired server node and choosing Action > Connect or right mouse button Connect.

   The Login dialog box appears.
3. Enter your fax administration user ID and password.
4. Click OK.

   The Login dialog box closes.
5. From the MMC Fax Administration snap-in, select the External Directory node and choose Action > New > Directory or right mouse button New > Directory.

   The New External Directory Wizard appears.
6. Enter the following:
   (a) A unique identifier for this LDAP directory in the Source ID field.
   (b) A common name for this LDAP directory in the Source name field.
   (c) The fully-qualified network node name or IP address in the Data server field.
7. Select LDAP from the Directory type drop-down list.
8. Click Next to proceed to the next LDAP configuration screen.
9. Enter one or more attribute name/value pairs in the Search base field.

   A common search base entry is `c=US`. The search base is dependant upon the entries within the LDAP directory itself. Some LDAP directories can use nothing, others may require multiple attribute name/value pairs.

   To enter multiple attribute name/value pairs in this field, separate each name/value pair with a comma.
10. Select a search scope setting from the drop-down list.

Important: Most LDAP directories communicate over data port 389. If your's does not, perform step 14. Otherwise, go to step 15.

11. Set the Custom Port option and enter your LDAP directory data port.
12. Click Next to proceed to the next LDAP configuration screen.

    This configuration screen is where you map your LDAP attribute names to VSI-FAX tags so that the LDAP data can be properly retrieved at send time.
13. Enter your LDAP attribute names in the appropriate fields.

Important: The only required attribute mappings are First name, Last name, and either Fax (number) or Email (address). The first two allow you to locate a specific recipient; either of the remaining two are used to actually send the fax. The remaining mappings are supplied for your convenience; that information will appear on your fax cover pages.

14. Click Finish, and the New External Directory Wizard closes.

Testing your LDAP configuration and setup

The external directory properties dialog box provides a Configuration Test feature that allows an LDAP server to be queried using your current confirmation settings and attribute mappings.

1. From VSI MMC Fax Administration, select the External Directory node.

   A list of available external directories appears in the list pane.
2. Select the LDAP directory node and choose Action > Properties or right mouse button Properties.

   The external directory properties dialog box appears.
3. Go to the LDAP tab.
4. Click Configuration Test.

   The LDAP Directory Search dialog box appears.

   The next part of this procedure involves structuring a simple query. For example, searching for a common last name such as "smith" is usually successful, provided that the LDAP directory is large enough.

5. Enter a value in one of the available search fields.
6. Select one of the Boolean operators from the drop-down list.
7. Click Search.

   If successful, a status dialog box notifies you that the search successfully completed and how many records met your search criteria.

   If you receive an error, modify your current configuration settings and attribute mappings and try again.
8. Click Close.

   The LDAP Directory Search dialog box closes.
9. Click OK, and the external directory properties dialog box closes.

Granting users access to LDAP directories

For normal users to send faxes using an LDAP directory, they must first be granted permission to access that directory in their VSI-FAX user profile.

⏩ For more information, refer to “Profiles” on page 60.

1. From VSI MMC Fax Administration, select the user profile and choose Action > Properties or right mouse button Properties.

   The Profile Properties sheet appears.
2. Go to the Directories tab.
3. Set or unset the LDAP directories this user is allowed to access.

Note: If you want to use the directory settings in the master profile, set the Use parent directories option.

---

4. Click OK, and the Profile Properties sheet closes.

Modifying LDAP directory settings

LDAP directory configuration settings and attribute name mappings can be modified via the directory properties sheet.

1. From the MMC Fax Administration snap-in, select the External Directory node.

   A list of available external directories appears in the list pane.

2. Select the LDAP directory node and choose Action > Properties or right mouse button Properties.

   The external directory properties dialog box appears.

3. Make your changes.

4. Click OK, and the external directory properties dialog box closes.

Least Cost Routing

Least Cost Routing (LCR) provides an economical way of sending faxes to the fax server that is closest to the ultimate destination. When a fax is submitted, the system performs a lookup in the LCR rules file to find a fax destination that handles faxes for a specific area code and or country. If no match is found, the fax is sent out locally.

The LCR function consists of two tables: a LCR rules file and a LCR routes file. The LCR rules file contains information about the routes and the associated country codes and area codes for that route. The LCR routes file contains the routes and their associated email address.

Let's assume you have a fax domain in New York and one in London, and your company sends a lot of faxes from New York to Paris. Rather than sending the Paris faxes from the New York fax domain, you can create an LCR entry in the LCR rules file that will route the Paris faxes via the London fax domain. As a result you save on the transatlantic phone costs.

LCR can be turned on or off using the `lcr` tag. The `lcr` tag is defaulted to `true` allowing Least Cost Routing of faxes based on country and area codes. However, you can turn `LCR` off by setting the `lcr` tag `false`.

Functional overview

Once a fax is submitted for transmission, VSI-FAX determines what type of request you are sending. If the request is a simple request, the dial string is converted and subsequently examined by the fax server that the request is entered on. The server takes the request and checks the LCR rules file to see if the fax number qualifies for routing.

If the number matches the LCR rules file, the fax server builds a tag file containing information from the local fax request database to describe the fax request. Items such as, recipient name, recipient company, from hostname, and from sequence number are included in this tag file to ensure the remote server’s log is as complete as possible.

The `vfxolog` shows information for both local and LCR routed faxes transmitted on behalf of another fax server. It should be noted that, for security reasons, all routed faxes are submitted to a remote fax server with a client ID of vsilcr.

The initiating fax server emails the fax request to the fax server specified in the LCR routes file. The fax servers poll the mail account specified in the `[VPOPD]` section of the `vsisrv.ini` file and look for messages. When the server receives the email message, it drops it into the `autosend` directory as a tag file and proceeds to send the fax out. The LCR system does the following:

1. Generates a response for the fax request.
2. Sends the response back to the originating server.
3. Updates the `vfxolog` status.
4. Completes the fax request.

Note: When `vfxolog` output is viewed after the fax is complete, two entries will be added, the first is the original fax request, and the second is the LCR fax request. The LCR request will have a client ID of vsilcr. User vsilcr is installed by default and should never be removed.

LCR cluster

An LCR cluster is two or more LCR-enabled fax servers configured to route faxes among one another in order to minimize telephone charges.

Each server in the LCR Cluster must be identified with a route name. To do this you must edit the `vsisrv.ini` file and add the name of the server. This name can either be the hostname for the server or a descriptive city/location name. Edit the file by making the following entry in the `vsisrv.ini` file:

```
[LCR]
route-name=NewYork
```

Launch notify procedure (LNP)

The LNP is a VSI-FAX script that is run when a fax is queued to the system but before it is transmitted. The LCR operation is accomplished via the standard VSI-FAX LNP procedure. The LCR LNP determines whether the fax request is a group request (containing multiple recipients) or a simple fax (containing a single recipient).

POP client

In addition to the LNP, LCR functionality requires each fax server to have the email-to-fax gateway installed and configured in order to retrieve and provide status for routed faxes that are directed to it. It should be noted that the email-to-fax gateway feature is a standard component included with all fax servers and only requires minimal configuration to use.

Additionally, each LCR-enabled fax server requires exclusive access to a POP email account. This account can be shared with the VSI-FAX email-to-fax gateway feature, but cannot be used by any other client application or user. For purposes of clarity, this email account will be referred to in the rest of this manual as the `autofax` account.

Setting up routes

This section describes how the Routes and LCR rules files are used by LCR to determine the routing of faxes. Based on the previous example of two servers, one in New York and one in London, the following explanation shows how the files would be set up.

The LCR function requires that dialing rules be established to match fax numbers. Fax dialing numbers are matched based on the patterns and wild-cards used to set up the LCR rules file. In addition to the structure of the LCR rules files, the following rules should be considered:

- If the dialing digits contains commas, LCR is not performed.
- All non-digits such as parentheses, hyphens, etc., are removed from the phone numbers.
- Any dialing digits that are within brackets are assumed to be a credit card number and are not used.
- Any digits that appear after an @ sign are assumed to be an extension number.

LCR routes file

The LCR routes file (`lcrhosts.lst`) is used to associate each route to the email account and is located in the `$VSIFAX/lib` directory. The following is an example of a LCR routes file.

```
# Sample LCR routes file
```

```
#
# <route_owner>:<transport_account>
#
NewYork:New_York@abc.com
LondonUK:lfaxes@fax.sys.co.uk
```

Note: LCR is designed to allow all fax servers to share the same routing tables. Once these files are set up, they must be distributed and copied to all servers in a cluster.

▶▶ Refer to your *VSI-FAX Reference Addendum* for additional information.

LCR rules file

The LCR rules file (`lcrrules.lst`) is used to associate a country code and area code to a route name and is located in the `vsifax/lib` directory. The following is an example of an LCR rules file.

```
# Sample LCR rules file
#
# <dial_string-skeleton>:<route_owner>
#
# US rules (by area code)
#
[1]212???????:NewYork
019*:LondonUK
```

In the first entry of the previous example, the presence of a digit between brackets `[ ]` indicates that the digit is optional. That is, any dial string that starts with or without a 1 followed by 212 followed by any seven digits will be sent through the New York server.

The second entry indicates that any fax sent with the number 019 followed by any digits will be sent through the London server.

Note: LCR is designed to allow all fax servers to share the same routing and LCR rules files. Once these files are set up they must be distributed and copied to all servers in a cluster.

▶▶ Refer to your *VSI-FAX Reference Addendum* for additional information.

Using wildcards in the LCR rules file

Entering an asterisk (*) in the LCR rules file tells the system to match any value(s) in that portion of the dial string. For example, in the file above, the entry `019*:LondonUK` tells the system that any dial string starting with 019 will be routed to London.

Note: We strongly recommended that any entries using the * be placed at the end of the LCR rules file to eliminate the possibility of routing a fax to the wrong location. For example, `if 1*:LosAngeles` were the first entry in the file all the other entries starting with 1 would be ignored. This is because entering the * after the first digit tells the system that all dial strings starting with a 1 followed by any digits should be routed to Los Angeles.

Question marks (?) can also be used as wild cards to represent exactly one digit. For example, the entry `1714555-5???` would match any number starting with `1714555` and ending with four digits between `5000` and `5999`. Similarly, the entry `1714???????` would match any number starting with `1714` followed by `7` digits.

Verifying entries in the routes and LCR rules files

LCR requires that for every route in either of the files, a corresponding setup entry must be in the other file. For example, if you set up an entry in the LCR routes file for the server in New York, you must also have the New York entry in the LCR rules file. After you complete the setup of the Routes and LCR rules files you can use the following command to verify that the two files are consistent. Enter:

```
vlcrchk -cv
```

This command compares the entries in the LCR routes file to the entries in the LCR rules file. If the system finds a route entry that does not have a corresponding route in the other file, it will report it, allowing you to correct the synchronization of the two files.

An additional check you can run is to verify the route name for a specific fax number by entering:

```
vlcrchk -n xxx-xxx-xxxx
```

Configuring the email-to-fax gateway

1. Edit the `vsisrv.ini` file and add the entries to the `[VPOPD]` section for the `POP3` mail server account.
2. Add a password using the `vfxadmin config` command.
3. Verify the configuration is correct by sending email to the email-to-fax gateway account.
4. Configure the `[VMAIL]` section of the `vsisrv.ini` file and confirm it is working using the `vmail -D` command to send an email message.
5. Edit the `[LCR]` section to the `vsisrv.ini` file as follows:
   - Add a `route-name=<name_of_route>` entry.

   Each machine in a group (cluster) must have a unique route name.
   - Add a `debug=on entry` (optional).
6. Add entries to specify route names and email addresses to the `$VSIFAX/lib/lcrhosts.lst` file. For example:

   ```
   AUTOFAX@hostname.company.com
   ```

   Important: Note that the email address must be fully qualified.
7. Add entries for rules that will trigger the LCR events to the `$VSIFAX/lib/lcrrules.lst` file. For example:

   ```
   [1]714*:lcrsupport
   ```
8. Copy both the `lcrhosts.lst and lcrrules.lst` files to all servers in the cluster.
9. Verify the completeness and correctness of the LCR rules you established using the `vlcrchk -v` command.
10. Restart the VSI-FAX scheduler.

Statusing LCR fax requests

In order to get status of faxes that have been routed to a remote fax server, LCR provides a pseudo-device `(lcr)` as well as a SMTP message type `(stat_msg)` that are recognized by the VSI POP client process. The `lcr`

pseudo-device is required to enable the originating fax server to maintain a tracer for fax requests that have been routed to a remote fax server. Working in conjunction with the `stat_msg SMTP` message type, the remote fax server's system transmit notify procedure, faxes that have been routed continue to appear in the `lcr` device queue with current status information until transmitted by the remote server.

The status information of a routed fax is delivered from the remote fax server system transmit notify procedure to the originating fax server using SMTP mail messages. These messages are communicated using the same transport, the email-to-fax gateway.

In order to support this remote status information, the VSI POP client also supports the SMTP message type stat_msg. Upon retrieval of a message having the type `stat_msg`, the originating fax server decodes and updates the local databases with the current status of the remotely routed fax.

Status information, while slightly less real-time in nature due to the SMTP transport, is provided by `vfxstat` in the same way as it is for non-routed faxes.

Statusing using the transmit notify procedure

Working in conjunction with the `lcr` pseudo-device, LCR provides status information to the originating fax server of a routed fax request, through the use of the system transmit notify procedure (TNP).

To accomplish this, upon transmission of a fax, an LCR-enabled server determines if the fax was routed. If it was, an SMTP message of type `stat_msg` is constructed and mailed back to the originating fax server's autofax account.

LCR tags

LCR uses five tags in the faxreqs database:

Tag	Definition
fhn	from hostname
thn	to hostname
tsq	to sequence number
fsq	from sequence number

The `lcr` tag determines whether a fax should be considered a candidate for being routed. It can also be used to override the LCR rules and send a fax locally. For example, the following shows how to set the `lcr` tag:

```
vfx –n 949-123-4567 –t lcr=false /etc/group
```

For a fax request, the `fhn`, `thn`, `tsq`, and `fsq` tags determine the to and from hostname and the to and from sequence number. For a routed fax, these fields indicate the node where the fax originated, where the fax was routed, the originating server's request ID assigned to the request, and the request ID of the remote server assigned to the request. Faxes that are not routed will contain the local fax server's hostname and the request ID in these tags.

Imaging server setup and configuration

An imaging server is a way to provide extended imaging services for a Unix fax server. If you have both a Unix fax server and a Windows fax server on the same network, you can configure them such that the Windows fax server images the additional file types, not normally available on Unix, for the Unix fax server.

In order to implement an imaging server, you must have a full VSI-FAX server installed on both the Unix and Windows NT/2000 hosts.

Note: You do not need to purchase any additional licensing to implement an imaging server. Your VSI-FAX licensing agreement allows you to install VSI-FAX on Windows NT/2000 in order to implement extended imaging services for your Unix production fax server. During VSI-FAX installation on the Windows NT/2000 computer, simply enter your Unix serial number and activation key.

To setup an imaging server, perform the following:

1. Verify that VSI-FAX is installed on the Windows NT/2000 computer you intend to use as the imaging server.

   The remainder of the imaging server setup is performed at the Unix fax server.

2. Stop the scheduler.

▶▶ For more information, refer to “License management” on page 79.

3. Modify the `vsisrv.ini` file by adding the following entry to the `VSINET` section:

   ```
   image-server=<host_name>
   ```

   Where `<host_name>` is the network name of the Windows NT/2000 fax server.

4. Start the scheduler.

Server maintenance

After the installation of a fax server and during its normal use, system resources will be allocated for the various storage and log operations. Over time, the allocation of resources can cause various problems ranging from poor performance, running out of disk space, and possibly data corruption. In conjunction with your normal system maintenance it is therefore recommended that periodic maintenance be performed on the fax server to ensure smooth and efficient operation. The following information is provided to explain the need for maintenance and some recommended processes for use by experienced system administrators. Note that most maintenance tasks require a user to be logged in as vsifax, root, or another administrative user.

Purging historical data and maintaining the database files

Regular purging of incoming and outgoing faxes will increase the responsiveness of the clients, which will load and run slowly if the database files become too large. Regular purging will also speed up processes that create the outbound and inbound log reports (vfxolog and vfxilog, respectively) and will help keep the files from becoming corrupted, which can cause the server to behave incorrectly.

Maintaining log files

The process of maintaining the Outbound and Inbound log files begins with the purging of data from the olog and ilog reports. This is accomplished using the vfxpurge command. The vfxpurge command will allow you to select the amount of data you want to purge and how much data to retain. It is recommend that a purge process be run nightly using a cron or MS-Schedule job.

Maintaining databases

Keeping databases purged can eliminate delays in locating information about sent faxes. If the log files are excessively large, the information can be difficult to find and errors may occur when running the vfxolog command.

The process of purging the files should also include periodic file unloading and rebuilding. This will help ensure that the databases contain accurate information, since excessively large database files tend to be more susceptible to corruption.

The rebuilding of database files can be performed using a series of VSI-FAX commands either individually, written into a script, or through other automated task managers, such as crontab or MS-Schedule. Sample daily and periodic scripts appear later in this section. The following describes the recommended weekly or monthly process:

1. Stop the VSI-FAX scheduler.
2. Purge old data from the databases.
3. Unload data to temporary files.
4. Delete the databases.
5. Recreate the databases from the schema files.
6. Reload the information from the temp files into the new database files.
7. Delete the temporary files.
8. Restart the scheduler.

Note: Note that during the rebuilding process, errors may be displayed that indicate some amount of database corruption. This is particularly likely if rebuilding has not been performed for a long time. Simply ignore these error messages because the problems they refer to will be repaired during the rebuilding process.

Sample scripts for maintaining databases and files

Scripts can be used nightly, weekly, or once per month depending on the number of faxes being sent and received by your fax server. These scripts are intended for use on Unix servers or with the MKS Toolkit.

Tip: If you are running VSI-FAX on a Windows NT/2000 server without the MKS Toolkit, the scripts can be modified to run correctly by changing each $ to C: and each / to \ and each rm to del.

Important: These scripts are examples. They must be modified according to your specific configuration and needs.

Nightly purge script

```
#!/bin/sh
# This example script purges all three logs,
# It retains any information that is 7 days old or less
#
$VSIFAX/bin/vfxsched stop
$VSIFAX/bin/vfxpurge -o 7
$VSIFAX/bin/vfxpurge -e 7
$VSIFAX/bin/vfxpurge -i 7
$VSIFAX/bin/vfxsched start
#
```

Weekly or monthly purge/rebuild script

```
#!/bin/sh
#
# Stop the VSI-FAX Scheduler
$VSIFAX/bin/vfxsched stop

# Purge the data from the database
$VSIFAX/bin/vfxpurge -o 7

# Unload data to temporary files
$VSIFAX/bin/vdbtool unload $VSIFAX/spool/dbs/faxtags >
$VSIFAX/spool/temp/faxt.tmp
$VSIFAX/bin/vdbtool unload $VSIFAX/spool/dbs/faxreqs >
$VSIFAX/spool/temp/faxr.tmp
$VSIFAX/bin/vdbtool unload $VSIFAX/spool/dbs/faxofns >
$VSIFAX/spool/temp/faxo.tmp

# Delete the databases
$VSIFAX/bin/vdbtool delete $VSIFAX/spool/dbs/faxtags
$VSIFAX/bin/vdbtool delete $VSIFAX/spool/dbs/faxreqs
$VSIFAX/bin/vdbtool delete $VSIFAX/spool/dbs/faxofns

# Create databases from the proper schema files
$VSIFAX/bin/vdbtool create -d $VSIFAX/spool/dbs
```

```
$VSIFAX/lib/dbs/faxtags.sch
$VSIFAX/bin/vdbtool create -d $VSIFAX/spool/dbs
$VSIFAX/lib/dbs/faxreqs.sch
$VSIFAX/bin/vdbtool create -d $VSIFAX/spool/dbs
$VSIFAX/lib/dbs/faxofns.sch

# Load data from the temp files into the new database
$VSIFAX/bin/vdbtool load $VSIFAX/spool/dbs/faxtags <
$VSIFAX/spool/temp/faxt.tmp
$VSIFAX/bin/vdbtool load $VSIFAX/spool/dbs/faxreqs <
$VSIFAX/spool/temp/faxr.tmp
$VSIFAX/bin/vdbtool load $VSIFAX/spool/dbs/faxreqs <
$VSIFAX/spool/temp/faxo.tmp

# Clean up temporary files
rm $VSIFAX/spool/temp/faxt.tmp
rm $VSIFAX/spool/temp/faxr.tmp
rm $VSIFAX/spool/temp/faxo.tmp

# Restart the Fax Scheduler
$VSIFAX/bin/vfxsched start

# End
```

Maintaining VSI-FAX directories

The fax server uses directories to store inbound and outbound faxes. These directories are `$VSIFAX/spool/dbs` and `$VSIFAX/spool/temp`. Over time, faxes left in these directories will eventually consume excessive amounts of space.

VSI-FAX uses the `$VSIFAX/spool/temp` directory for various operations, such as storage of pending tiff files. The directory should be empty when the scheduler is idle (no jobs pending). If this directory is not empty, use vfxstat to determine if the scheduler is idle, then remove any files in the directory.

When the scheduler is idle, the `$VSIFAX/spool/in` directory should also be empty. If tiff files are found in this directory, a problem occurred while routing an inbound fax to a specified inbox and caused the fax to remain in the in folder. Use `vfxstat` to determine if the scheduler is idle, then remove any files in the directory.

Debug log files

Debug files are created each time the scheduler is restarted. These files are self-maintaining, and they will not become unreasonably large if the scheduler is restarted periodically. Esker recommends that the scheduler be restarted about once a day. Restarting the scheduler once a day will ensure that, along with maintaining the debug log files, any defunct/runaway processes can be managed. It also ensures that the shared memory segments and resources used by VSI-FAX are reset and cleaned which will help to ensure smooth VSI-FAX operation.

The log file names are numerically incremented each time the scheduler is started, up to the number of files set in the `vsisrv.ini` file, using the `max-debug-log` entry. The current debug files do not have a number designation (fax1) however, as new debug files are created they will be incremented (fax1-0, fax1-1, fax1-2, etc.) until the maximum number of files are reached.

Along with database files, the debug log files will grow in size over time until the scheduler is restarted. If the debug option is turned on, the amount of information written to the debug logs files will be extensive.

Archiving faxes and maintaining user's inboxes

If you are using VSI-FAX to receive and route inbound faxes, each client user will have an inbox identified by their user name or user ID. All faxes received for a particular user will be routed to that user's inbox, located in the `$VSIFAX/faxq/<user ID>` directory. Every user can save, copy, or delete faxes from their inbox. Faxes that are not routed to individual inboxes are routed to the inbox of user vsifax.

Users should try to maintain manageable levels of faxes in their inboxes. A VSI-FAX administrator should set up a monthly maintenance cycle or script that checks each user's directory, including user vsifax, and deletes any files older than a specified date.

Resetting sequence numbers

Sequence numbers are assigned to inbound and outbound faxes for tracking purposes. The fax sequence number can be changed and or reset to a specific value based on the organization's needs. The fax sequence number is stored in the seqno database file in the `$VSIFAX/spool/dbs` directory. Some organizations like to reset the fax sequence number at the beginning of a month or a new year. The process for changing or resetting the sequence number is the following:

1. Stop the VSI-FAX scheduler.
2. Change to the `$VSIFAX/spool/dbs` directory.
3. Using the `vdbtool` command, unload the seqno database file with the `-x` option. For example:

   ```
   vdbtool unload -x seqno > seqno.txt
   ```

4. Edit the `seqno.txt` file and change the sequence numbers to the desired values.
5. Load the updated `seqno.txt` file back into the seqno database file. For example:

   ```
   vdbtool load -f typ,seq seqno < seqno.txt
   ```

6. Restart the VSI-FAX scheduler.
7. Delete the `seqno.txt` file.

Scheduling periodic fax server maintenance

VSI-FAX provides a mechanism for automatically scheduling periodic fax server maintenance (e.g., database rebuilds, log file purges, etc.). Each periodic event is scripted via an entry in `$VSIFAX/lib/crontab.lst`.

This new scripting mechanism is based on the Unix cron function; experienced cron users will be immediately familiar with the syntax used in crontab.lst.

▶▶ Refer to your *VSI-FAX Reference Addendum* for additional information.

You can also control automatic scheduling of periodic fax server maintenance using the VSI-FAX MMC Fax Server Administration snap-in. Select the fax server node and choose Action > Properties > Maintenance.

⏩ Refer to the VSI MMC Fax Server Administration online help for additional information.

Customization techniques

This chapter describes various ways to customize VSI-FAX to meet your particular needs.

Customizing the fax header

You can permanently override the default fax header string by changing the `ad-string` entry in the `vsisrv.ini` file. That way you can have your organization's name or other information appear in the header. To change the `ad-string`, edit the `vsisrv.ini` file changing the 'ad-string' to the new value. For example:

```
ad-string="From: New Company Name"
```

Using the pgh tag overrides the page header string for a single fax request. For example, to override the TSI string using the tti tag, enter:

The tti tag overrides the tsi tag for a single fax request.

Template files

Template files are a powerful integration and site customization tool. They allow you to:

- Customize email transport (routing) messages sent by the fax server
- Customize various notification email messages sent by the fax server
- Customize the way fax status is displayed with `vfxstat`
- Retrieve fax envelope information from the fax server and use it as part of a group faxing strategy

This topic discusses how to use template files to customize fax server email transport (routing) messages and `vfxstat` fax status reports.

▶▶ See "Customizing notification email messages" on page 121 for additional information about customizing notification email messages.

File structure and syntax

Template files can be plain ASCII text, PostScript, or PCL files. They generally contain a mixture of plain text and tags. When the fax server process a

template file, it populates any tags it finds in the template file with either the current value for tag or the default value defined in the template file.

The default value is only used if a current value for that tag is not defined via some other method (e.g., specified on the command line, in a tag file or by embedded tag).

It is this conditional behavior (i.e., use the current value or use the default value) that makes template files especially powerful and flexible. Once they are created, they can be easily shared and re-used throughout your site.

The syntax for defining a tag inside a template file is:

```
${<tag>[,[<max>].[<length>]][:<default>]}
```

Where:

`<tag>`	Tag name.
`,[<max>].[<length>]`	Optional length statement. Tag values exceeding `<max>` are truncated to that value by removing characters from the left of the value; tag values shorter than `<length>` are made that length by appending trailing spaces to the right of the value
`<default>`	Optional default value for the tag.

Consider the following example send-notify template:

```
Your fax request ${seq} to ${tnm:<unknown>} at ${tfn}
was sent at ${sti} with a result of ${rrs}.

Fax info:
# pages :${npg}
memo:${ntf}}
```

The first line contains a short synopsis of the fax request status, comprising the fax request ID (`seq`) tag, the recipient name (`tnm`) tag, recipient fax number (`tfn`) tag, send time (`sti`) tag, and the fax request result code description (`rrs`) tag. If the name (`tnm`) tag has a current value, it is used. However, if the `tnm` tag has not been defined, it uses the default value, unknown.

The remainder of the message includes the total number of pages (`npg`) tag and contents of the note file as defined by the `ntf` tag.

Special capabilities and limitations

When working with template files, be aware of the following special capabilities and limitations:

1. Template files must reside in the `$VSIFAX/lib/templates` directory. Template files in other directories cannot be used by the system.
2. The note file (`ntf`) tag is special. If specified in a template file, the contents of that file is inserted into lines immediately following the `ntf` reference.
3. If a tag is specified without a default value and that tag is empty (i.e., it has no associated value), an empty string is output.
4. If the `<max>` value is greater than the `<length>` value, it is set to `<length>`.
5. If a template file is specified and cannot be found, the default message will be silently used.
6. The `vinfo templates` command lists all template files in the `$VSIFAX/lib/templates` directory.

Customizing email transport (routing) messages

When the fax server routes a fax to a user's email inbox, it does so by creating a short email message and including the fax as a TIFF file attachment.

The default email transport message shows the sender as VSI-FAX server. The subject line shows the total number of pages in the fax and the originating fax number (i.e., TSI string). The body of the message looks like this:

```
ID:16175
clientid:jsmith
TSI:408 270 9330
rcvd at:2000/04/13 10:22:59
# pages :1
```

To customize all email transport messages sent by the fax server:

1. Create your template file.
2. Place the template file in the `$VSIFAX/lib/templates` directory.

3. Add this entry to the `$VSIFAX/lib/vsisrv.ini` configuration file:

   ```
   [DEVICE:sm]
   template=<my_template.tpl>
   ```

   Where `<my_template.tpl>` is the template file you want to use for your email transport messages.

Customizing vfxstat output

You can use template files to customize `vfxstat` status reports. Simply specify a valid template using the `-T` option as follows:

```
vfxstat -T <template_file> <req_ID>
```

Consider the following sample template file that could be used to customize `vfxstat` reports:

```
Fax request:${seq}
Num pages:${npg}
Result:${rrs}

To name:${tnm,20.20}From name:${fnm,20}
To company:${tco,20.20}From company:${fco,20}
To fax number:${tfn,20.20}From fax number:${ffn,20}
```

Notice the extensive use of length statements to ensure a pleasing tabular report layout.

Troubleshooting

This chapter describes common problems that you may encounter while installing, configuring or using VSI-FAX. If you do not find your problem described in this section, try to pinpoint it before you contact Esker for help.

Before calling support

Write down a complete description of your problem, including the precise series of commands or steps that led to the problem.

Include any error messages displayed. Write each error message down exactly as it appears, complete with any punctuation and uppercase or lowercase characters.

List all the hardware components, including brand names and model numbers of the host system and equipment associated with the fax modem. Knowing the hardware and software configuration of your system is vital to a correct and timely diagnosis of your problem.

List all applications and third party device drivers associated with the system.

Please have the following information ready when you call Esker Support:

- Make and model of computer system
- Modem type
- Serial port (internal, serial card, etc.)
- Cabling
- Operating system
- VSI-FAX release, serial number and build number (enter `vfxsched -V`)
- Application program that caused the error
- Complete description of problem
- Steps to recreate the problem
- Any error messages

Putting the scheduler in debug mode

Putting the scheduler in debug mode is one of the first things you should do when you encounter any problem.

1. Stop the scheduler
2. Edit the `[VFXSCHED]` section of the `$VSIFAX/lib/vsisrv.ini` file by making the following change:

   ```
   Debug=On
   ```

3. Restart Scheduler in debug mode by entering:

   ```
   vfxsched -D
   ```

   The data is written to the `vsinet` file in the `$VSIFAX/spool/logs` directory. The log files are:

fax1	Default fax log
lb	Loopback FIM log
vsinet	Networking, TCP/IP errors
vfxsched	Scheduler errors

These log files are incremented each time the scheduler is restarted. For example, these files may be used if you are dialing but the faxes fail. You can then put the scheduler in debug mode, then try to re-send the fax, and view the default fax log (i.e., fax1).

When you no longer need debug on, edit the `vsisrv.ini` file and change the `Debug=` setting to `off`.

Device problems

To keep the fax server working properly, it is important to know when the system has stopped working properly and the best way to recover from an error. Common errors are `Modem Server Keeps Dying` and `Max NoDials Reached`. This error may be caused when a phone line fails, when problems occur with a PBX, and/or when a modem fails to respond.

VSI-FAX has the ability to send an email message or other notification when a modem has stopped working. A stop-notify script added to the system will notify a user or system administrator that a modem has stopped working. The

fax server can also be set up with a start and stop notification script showing when the server is started or stopped. This can be used to notify a user or system administrator that the server is running or, in case of an error, how long the server has been down.

If a reference to it is added to the `vsisrv.ini` file, the following sample script will run automatically when a modem server dies.

```
#!/bin/sh
#
# Specify User mail address to send messages to
MAILTO=user@vsi.com
DEST=$1
CAUSE=$2

if [ -f /tmp/fail1 ]
then
# restart fim
elif [ -f /tmp/fail2 ]
then
# restart fim
elif [ -f /tmp/fail3 ]
then
#mail fatal fim message to specified user
fi
```

When the script runs, it will check to see if a `tmp` file exists. This `tmp` file will contain a value that corresponds to the number of times the software has attempted to restart the FIM. If the value is three, the script will send a fatal mail message to the specified user. If the value in the `tmp` file is less than three, the script will restart the FIM.

DID fax modem support

To determine the version number of a modem that is currently being used by VSI-FAX, examine the log file located in the `$VSIFAX/spool/logs` directory. The file is normally called `fax1` for the first device or class, `fax2` for the second device or class, etc. The log file will contain entries like these:

MTYPE : 7.000 : Modem manufacturer : MULTI-TECH

MTYPE	:	8.000	:	Modem model	:	MT1932ZDX
MTYPE	:	8.000	:	Firmware version	:	0115

Runaway processes

VSI-FAX uses several processes that run during normal VSI-FAX operation. These processes should be self-maintaining and will only need attention if the server begins to exhibit abnormal behavior, such as failing to restart, after it is stopped.

Runaway processes frequently cause this type of behavior. To determine whether there are any runaway VSI-FAX processes, stop the scheduler and use the `vfxsched -l` command to list any running processes. Runaway or defunct processes can be caused by various reasons. Some may be caused by other software and OS applications, incorrect shutdowns of systems, corruption of File systems, or running out of hard drive space.

Since no processes should be running once the scheduler has been stopped, `vfxsched -l` should show no processes. If there are runaway processes, the output of `vfxsched -l` will look something like this:

```
19007: vrsched
19010: vgsched
19011: vxmld
19012: vnetlgn
19008: vnetcmd
19019: vnetfax
19015: lb-fim
19009: sm-fim
```

Use the kill command to terminate vrsched. This will probably cause the other runaway processes to terminate. If not, kill them individually. They will restart themselves when the VSI-FAX server is restarted and they will not require any additional attention.

Loading media error

Problem

Error reading floppy disk.

Solution

When installing from diskette, verify that you are using the proper device. Watch the light on the disk drive while loading to be sure that you have picked the correct device. It is easy to select the other floppy disk on a two-drive system.

Confirm that the distribution media was loaded in the proper sequential order.

If you receive a seek error, try reading the diskette on another system if possible. If the error persists, contact Esker to arrange for replacement media.

On systems which use a volume manager, such as Solaris, make sure that the floppy drive is not being controlled by the volume manager (vold).

Problem

Mount could not mount `/cdrom`: no such file or directory (error 2)

Solution

The `/cdrom` directory is the mount point for the mount command. This error message will occur if the `/cdrom` directory does not exist. Use the Unix `mkdir` command to make the directory and try the mount command again. An alternate mount point could be the `/mnt` directory which should exist.

Installation errors

Problem

Fax device or class is shown as Initializing or is set to Not Running.

Solution

The VSI-FAX scheduler executes one Fax Interface Module (FIM) process for each fax device or class on the system. The Initializing or Not Running state reported most often is due to the failure of the FIM to successfully initialize the modem. It essentially was unable to communicate with the modem.

Some of the items to check are:

- Make sure the fax modem is powered on.
- Confirm that the serial modem cable you are using is correct for the specific system.
- Confirm that the FIM process has exclusive use of the serial port and that no other processes are currently running on the serial port. This also includes disabling the port on systems using a serial port manager.
- Confirm that the serial port permissions are rw-rw-rw-(666).
- For Ethernet terminal servers, make sure the terminal server serial port is set to support full modem control signals, software flow control, and is set up to accept host system stty configuration.

VSI-FAX includes a utility program that allows you to open the serial port and establish communication with the fax modem. The program is called `vtalk` and is located in the `$VSIFAX/lbin` directory. For example:

```
vtalk -c -v /dev/tty1A
```

This program will allow you to troubleshoot serial communication with the fax modem. Once connected, you will not see a prompt or any other indications that you have successfully opened the serial port. You have to begin by entering the AT&F modem reset command. You should then receive a response of `OK` assuming that you are successfully communicating with the fax modem. Next, to try dialing out using the fax modem to determine if the modem is actually responding to commands:

```
ATDT17144892486
```

To exit the program, just press `CTRL \`.

Problem

Error message, Cannot Login to Server

Solution

This message is displayed when you execute any command that requires a response with information from the fax server.

The fax scheduler may not be running. You can confirm this with the following command:

```
vfxstat -r

Scheduler is not running
```

One of the scheduler's Unix server processes may have stopped servicing requests. Stop and restart the fax scheduler to resolve this problem.

```
vfxsched stop

vfxsched start
```

Communications and modem problems

Problem

Permissions on the port keep changing.

Solution

This is due to another process attempting to use the port, and this virtually guarantees failures as the two programs contend for access to the device. VSI-FAX demands exclusive access to the serial device used to communicate with the fax modem.

Most commonly, this is due to a getty command attempting to start a login on the port. This must be disabled permanently. Although methods for doing this vary from machine to machine, we will detail a few common mechanisms here.

Note: You must be root to complete these procedures and you usually have to edit the ownership and permissions on the port one final time once you've disabled the getty.

Platform	Method
SCO UNIX	Disable the getty on the port ttyXX by entering `disable ttyXX`. This permanently turns off getty access to the port, leaving it free for VSI-FAX.
System V Release 2 and 3	The `/etc/inittab` file contains a list of all programs that are run automatically, and this includes all the getty entries. One line in this file mentions the tty that is of interest to you. This line must have its third field changed from `respawn` to `off`. Once this file is saved, run `init q` to make the changes take effect.
System V Release 4	These machines use a `ttymon` process that monitors each port and automatically runs a login when a connection is established. You must use your system administration facilities to ensure that no activity is undertaken on your fax device port.

Note: Intel-based machines usually store their per-port `getty` information in two places. This means that changes `/etc/inittab` are lost when the kernel is rebuilt. Look for the `getty` line in the file, `/etc/conf/cf.d/init.base`, or in all the files in the `/etc/conf/init.d/` directory. Make the change in `/etc/inittab` plus the appropriate `/etc/conf file`, and run the `init q` command. A kernel rebuild is not necessary.

A rogue process may be running on the port. Recall that VSI-FAX must have exclusive control of the port to which the modem is connected. One way of detecting rogue processes is by the use of the `ps` and `grep` commands:

```
# ps -ef | grep ttyXX
```

Many operating systems provide a program that helps you track down processes that are using any given file, and you can use it to find which process is using the device. The `/etc/fuser` (file-user) command takes a list of filenames and searches through kernel memory and reports the process ID of any

program that is using that file in any way. Once the PID is given, run `ps -ef <PID>` to identify what the process is.

Problem

The fax modem answers calls but terminates during negotiation.

Solution

Could be a compatibility issue with the sending fax machine and the fax modem's firmware. Try isolating the problem to a specific fax machine, which may then require an upgrade of the modem's firmware.

Problem

Log files display time-out errors even though the full document was received at the remote site.

Solution

The fax modem will attempt to send the same page up to a total of three times. If the remote site has a thermal fax machine, then the portions of the page that were successfully received at the remote fax machine will appear, but unless the remote fax machine responds with a positive acknowledgment, the local fax modem will reject the fax attempt up to a total of three times. This condition could be caused by transmission errors, firmware incompatibility between the fax modem and the remote fax machine. It could also mean that the Unix serial port's software flow control is not functioning correctly and data is being lost between the FIM software and the fax modem. The acknowledgments from the remote fax machine received by the fax modem are not making it back to the fax software.

Problem

The received fax transmission speed is no greater than 4800bps.

Solution

The dial line may be contributing to a high degree of errors.

The transmitting fax machine may be limited to or manually configured to transmit at a rate lower than 9600 BPS.

Problem

Every call terminates with NO ANSWER.

Solution

Be sure you are calling a fax machine. Do your initial fax testing in the same room as the modem so you can hear the call progress yourself. An answer of hello usually means a human has picked up the line.

Verify that the proper dialing codes are used (e.g., some telephone systems require the prefix of 9, to reach an outside line). To check, turn debug on, then view fax1 (or your default) to see what the dialed number is being converted to.

Problem

A loud beep is heard about every two seconds on a fax call.

Solution

This is normal. Outgoing fax modems always emit a CNG tone about every two seconds to tell the recipient that the caller is a fax machine and not a person. This cannot be disabled, but you can turn down the volume using the adjustment screw on the back of the modem.

Problem

Modem server keeps dying

Solution

This problem could be due to serial port problems, serial port configuration issues, cable problems, unsupported modem issues or modem problems.

VSI-FAX only supports fax Class 2 or Fax Class 2.0 modems. Fax Class 1 modems are not supported.

VSI-FAX provides the `vtalk` utility for assisting in troubleshooting modem problems. VSI-FAX for NT administrators can use the Windows HyperTerminal application.

The `vtalk` utility is located in the `$VSIFAX/lbin` directory.

```
vtalk -c -v /dev/tty1A
```

After the port opens successfully you can enter modem AT commands

ATE1	This enables echo responses from the modem. The modem should return `OK`.
ATZ	This is the modem reset command. The modem should return `OK`.
AT&F&W	This is the modem load factory defaults and write to the profile. The modem should return `OK`.
AT+FCLASS=?	This is the modem command to query the supported fax classes. The modem will return `2` for Class 2 support, `Class 2.0` for Class 2.0 support and `1` for Class 1 support. Other values are `0`, which is data mode, and `8` which is voice mode.

Press `CTRL \` to exit.

If the modem did not respond check the serial port configuration, serial port cable and power cycle the modem then try the `vtalk` utility again. If the modem does not appear to support Class 2 or Class 2.0, visit our web site www.esker.com for the list of supported modems.

Printing problems

Problem

The `vfxprint` output to an HP LaserJet printer is unreadable.

Solution

The PCL output from `vfxprint` requires an eight-bit binary interface with no translation of any kind by the printer driver. This is usually controlled by

the `stty` command, and features such as parity, tab expansion, or NL-to-CRLF translation will play havoc with the binary data. A completely raw mode must be selected. Tracking this down usually requires a bit of system administration experience, but there are some steps you can take to fix this problem.

The line printer spooler system provides a shell script, specifically an interface script, that is responsible for routing the data to the printer. The lp command has the -o argument that permits the passing of arbitrary options to this script, and many standard interfaces support some way of selecting this raw mode.

While debugging the lp spooler interface scripts is well beyond the scope of this document, users with administrative experience can usually look at the script and find the way to do it. Look for raw or graphics options that directly or indirectly set the `-opost stty` option.

The normal interface scripts are stored under the `/usr/spool/lp` directory, in a sub directory that depends on the operating system version. Before System V Release 3.2, the `interface` sub-directory contained the scripts, and at 3.2 and beyond they are kept in the `admins/lp/interfaces` sub-directory.

Some systems support the use of the `lp -oraw` command to indicate raw data being sent to the printer.

Miscellaneous problems

Problem

A received fax appears stretched or expanded.

Solution

The original fax was probably sent in standard resolution mode and should be resent in fine resolution mode. For example:

```
vfx -n555-1212 -E fine file.tif
```

Formatter errors

Problem

PostScript documents will not fax.

Solution

The PostScript language is highly standardized, but there is just enough deviation from the norm that compatibility problems still arise. The first test is always to send the document to a real PostScript printer, with an Adobe interpreter if possible. If the document fails to print there, the VSI-FAX PostScript formatter will normally not process it properly.

The most common cause of these problems is an improperly configured or invalid PostScript driver in the application software, or the use of Level 2 options. The VSI-FAX PostScript formatter only supports PostScript Level 1 files.

Most new printers support the more recent Level 2 language as defined by Adobe, and their drivers often use these additional features. Some drivers can have Level 2-specific features disabled, so select this if available. We have seen the least amount of compatibility problems with the Apple LaserWriter driver.

Before calling technical support, please have the exact name and version of the application that generated the PostScript code. You may be asked to send a copy of the file that produces the error so we can reproduce the problem in-house. Be sure not to discard your test programs.

Problem

The quality of gray scale is poor.

Solution

Halftones that are tuned for one kind of PostScript engine, such as a 300 dpi write-white engine, usually require adjustment when moving to a different engine, and this is certainly the case with VSI-FAX. These adjustments can require a great deal of trial-and-error, but it usually involves reducing the halftone frequency.

Problem

Lines vary in size.

Solution

This is almost always caused by the PostScript driver not rounding to device space coordinates properly. At 300 dots per inch, it is hard to see the difference between a 2-pixel-wide line and one that is 3 pixels wide. However, at 200 dpi, a 1-pixel-wide line definitely looks different. There are common programming techniques that completely eliminate these resolution-dependent artifacts, but some drivers choose not to use them. Report this to your application vendor.

Problem

Fax fails with the reason for failure BADIMG

Solution

This error condition indicates that the file submitted for faxing could not be imaged properly. It can be caused by a corrupt input file or submitting an input file that is not in a supported file format.

VSI-FAX supports ASCII, TIFF, PostScript (Level 1 only), and PCL5e input files.

VSI-FAX uses the following conversion applications for submitting input files to the appropriate formatter. All of the conversion applications are located in the `$VSIFAX/lbin` directory.

pcltotif	This application converts PCL or ASCII files into TIFF files.
pstotif	This application converts PostScript files into TIFF files.
eptotif	This application converts Epson format files into TIFF files.

The following example shows a method of using the conversion application directly to image the input file rather then submitting the input file from the

vfx command line or from one of the other fax submittal methods in VSI-FAX. The example filename file.* should be replaced with your input file.

For PCL or ASCII files

```
pcltotif -o /tmp/test.tif -E fine file.pcl
```

If successful, this will create the `/tmp/test.tif` output file or return error messages if unsuccessful.

For PostScript files

```
pstotif -o /tmp/test.tif -E fine file.ps
```

If successful, this will create the `/tmp/test.tif` output file or return error messages if unsuccessful.

For Epson format files

```
eptotif -o /tmp/test.tif -E fine file.ep
```

If successful, this will create the `/tmp/test.tif` output file or return error messages if unsuccessful.

For TIFF files

```
vtifftool -o /tmp/test.tif -E fine file.tif
```

If successful, this will create the `/tmp/test.tif` output file or return error messages if unsuccessful.

Problem

Fax fails with the reason for failure SCHERR

Solution

This error condition indicates that the VSI-FAX scheduler processes have experienced an error condition. This error could be a permissions problem or a scheduler problem.

To resolve SCHERR conditions, the VSI-FAX scheduler should be restarted in debug mode and then, after recreating the problem, you go to the `$VSI-FAX/spool/logs` directory and look for error messages in the `vrsched`

and `vsinet` debug logs. Submit the debug logs to Esker Technical Support if required.

Web server debug logging

If you are experiencing problems with the web fax client, turning on additional web server debug logging can often help you locate the source of the problem. To troubleshoot using extended web server debug logging information, perform the following:

1. Edit the `$VSIFAX/webserver/conf/httpd.conf` and change the `LogLevel` setting from `warn` to `debug`.
2. Edit the `$VSIFAX/webserver/conf/jserv.conf` and change the `ApJServLogLevel` setting from `notice` to `debug`.
3. Edit the `$VSIFAX/webserver/servlets/WebClientServlet.initArgs` and change the `global.debug-mode` setting from `OFF` or unset to `ON`.
4. Restart the scheduler (page 76).
5. Duplicate your previous problem, then check these files for troubleshooting information:
   - `$VSIFAX/spool/logs/vhttpd`
   - `$VSIFAX/spool/logs/jserv`
   - `$VSIFAX/spool/logs/webclientservlet.log`
   - `$VSIFAX/spool/logs/vrsched`

Using vfx tags

This chapter discusses various ways you can use `vfx` tags to fax-enable your existing business applications.

Tags are always three-character mnemonics for the function they accomplish. For example, the `tfn` tag is used to define the fax number, the `tgf` tag is used to define a tag file, etc.

The vfx command line

The easiest way to use tags is to include them on with a `vfx` command by using the `-t` option. For example, to fax a text file (`hello.txt`) containing the message “Hello, World” to local fax number 555-1212, you would enter in a command shell at the fax server:

```
vfx -t tfn=555-1212 -t fll=hello.txt
```

Passing tags to the fax server using `vfx` commands is a good integration technique for situations where your existing business application can issue external commands.

Note: The VSI WordPerfect for Unix macros use this integration technique. When these macros are run from inside a WordPerfect session, they prompt the user for the fax number, then issue an external `vfx` command that images the current document and passes it to the fax server.

⏩ Refer to your *VSI-FAX Reference Addendum* for complete `vfx` command documentation.

vfx tags

`vfx` tags are used to pass fax envelope (page 1) information to the fax server. You can use any of the following on a `vfx` command line, as well as in tag (page 172) and batch (page 194) files:

Tag	Description
aco	From area code.
ad1 - ad3	To address lines 1 thru 3.
arc	Automatically archive sent faxes.
cli	Client ID.
cvr	Cover page.
dtf	Custom date format.
fa1 - fa3	From address lines 1 thru 3.
fcn	From country name.
fco	From company name.
fcv	File conversion options.
fdl	Local folder.
fds	Server folder.
fem	From email address.
ffn	From fax number.
fll	Local file attachment.
fls	Server file attachment.
fnm	Custom from name.
fpg	TIFF file attachment page range.
fpl	File attachment page size.
frs	File attachment send resolution.
ftp	File attachment type.
fvl	Local overlay.
fvn	From voice number.
fvs	Server overlay.
gal	Group name.
gnp	Group notify procedure.

Tag	Description
grp	Group file.
icc	Internal CC with cover page.
lcr	Allow least cost routing.
lnd	Sent fax page orientation.
lnp	Launch notify procedure.
mad	From email address.
ncc	Internal CC without cover page.
not	Send notify mode.
ntx	Note text.
ofn	File attachment original path.
oui	Override USERINFO.
ovl	Local overlay.
ovs	Server overlay.
pal	Person alias.
pgh	Custom page header.
pgl	Sent fax page size.
pre	From fax number prefix.
que	Fax queue.
res	Send resolution.
ret	Retry strategy.
sig	Signature file.
stm	Send time.
sub	Subject.
suf	From fax number suffix.
tco	To company name.
tfn	To fax number.
tg1 - tg4	Custom from tags 1 through 4.
tgf	Tag file.
tin	Custom to information.
tmf	Custom time format.
tnm	To name.

Tag	Description
tnp	Transmit notify procedure.
tsi	Transmitting station ID.
tti	Transmitting terminal ID.
tvn	To voice number.
udf	User defaults.

Tag files

Tag files are ASCII text files that contain one `vfx` tag per line. For example, you could fax the same message as the previous example by saving this information to tag file `hello.tag`:

```
tfn=555-1212
fll=hello.txt
```

To send the fax, you would pass the tag file to the fax server using the `-t tgf=<tag_file>` option as follows:

```
vfx -t tgf=hello.tag
```

You could easily add a few more tags to include a "classic" cover page (`cvr` tag) with a subject line (`sub` tag), recipient name (`tnm` tag) and recipient company name (`tco` tag). That tag file would look like this:

```
cvr=classic
sub=Sample Hello World Fax

fll=hello.txt

tfn=555-1212
tnm=Billy Bear
tco=Wild Mountain Resorts
```

Tag files are especially useful for situations where your existing business application can write output to a file but cannot issue external commands. However, you must write the script that passes the tag file to the fax server. This is typically done using `vfx` commands, placing the file in the `autosend` directory or emailing the file to the fax server.

Tag files with multiple files or recipients

When a tag file defines more than one file to be included with the fax (e.g., using multiple `fll` tags) or defines more than one recipient (e.g, using multiple `tfn` tags), the tag file must be constructed in a particular order or that fax will not be sent as intended.

Important: Tag files have one important limitation: they cannot send different faxes to different recipients. You can send the same fax to more than one recipient (i.e., send a group fax) but the faxes will be identical. If you need to send different faxes to different recipients, consider using a batch file.

⏩ "Advanced group faxing" on page 189 for additional information.

1. Each recipient block must start with a `tfn` tag. All subsequent information (e.g., name, company name, etc.) is assumed to be for that recipient until the next `tfn` tag is encountered.
2. Each file inclusion block must start with one of the following tags:

Tag	Description
fdl	Local folder.
fds	Server folder.
fll	Local file attachment.
fls	Server file attachment.
fvl	Local overlay.
fvs	Server overlay.
ovl	Local overlay.
ovs	Server overlay.
sig	Signature file.

All subsequent file-specific information is assumed to be for that recipient until the next file inclusion tag is encountered.

Let's extend our previous example even further by including more than one file and sending this identical fax to more than one recipient.

```
cvr=classic
sub=Sample Hello World Fax
```

```
fll=hello.txt
fvl=hello.tif

tfn=555-1212
tnm=Billy Bear
tco=Wild Mountain Resorts

tfn=556-1313
tnm=Rocky Racoon
tco=Big River Ski Lodge

tfn=557-1414
tnm=Kyle Koala
tco=Down Under Adventures
```

This tag file will use a classic cover page with the subject line, “Sample Hello World Fax.” This cover page will be populated with the name and company name of each recipient (defined with the `tnm` and `tco` tags in each recipient block, respectively).

The fax will comprise a local file attachment (`hello.txt`) and a local overlay file (`hello.tif`). Everything but the cover page will be identical for all fax recipients.

“Here” documents

“Here” documents are special cases within tag files and batch files (page 194) where a local file, instead of being referenced externally, is actually embedded directly into the tag or batch file.

“Here” documents can be embedded using any of these `vfx` tags:

Tag	Description
fll	Local file attachment.
ntf	Note file (memo).

The normal way to use any of these tags is to supply an external file specification (full path and file name you want to include). When you define a “here” document, you simply define an internal area of the tag or batch that contains the same information. Consider this example:

```
fll=<<EOF
```

```
Hello, World.
EOF
```

Instead of the `fll` tag referencing an external text file (containing the message, Hello, World.), the message is directly embedded using the `<<EOF` and `EOF` statements to define the area between them as a "here" document.

Tip: You are not limited to using End of File (EOF) character strings to define your here documents. You can use any character sequence you like, provided that it does not contain spaces and is not used in the body of your here document. In fact, you **will** need to use a different character sequence if your here document contains an EOF statement within it.

"Here" documents provide additional flexibility when you need to fax-enable an application that can write output to a file but cannot issue external commands.

Embedded commands

You can embed `vfx` commands in ASCII text, PCL or PostScript files, then pipe or redirect them to the `vfx` command as standard input (STDIN). These embedded commands are processed just as if you had entered them directly on the command line.

Embedded commands are typically used to do these things:

- Embed images, such as company logos, directly into a file you want to fax
- Embed tags that contain fax envelope information (page 1) directly into a file you want to fax

Embedded commands are especially useful when integrators are programmatically generating a faxable file directly from an existing business application. These embedded commands allow you to create the entire fax (including the fax envelope information) and simply hand it to the fax server for sending - no additional formatting or intervention is required.

Embedded images

The `@+IMAGE` embedded image command allows you to include TIFF files, such as your company logo or a personal signature, in a faxable document. Furthermore, you can control the exact position of each embedded image on the faxed document.

The basic syntax for an embedded image statement is:

```
@+IMAGE[<file_name.tif>]
```

Where `<file_name.tif>` is the name of your TIFF file.

Capabilities and limitations

The `@+IMAGE` embedded command must be all uppercase. However, the remainder of the embedded image statement (e.g., file name, position coordinates, etc.) is case-insensitive.

The `@+IMAGE` statement can only include single-page TIFF image files. Multi-page TIFF files are not supported (only the first page will be faxed).

Embedded image statements can only refer to files in these directories:

- $VSIFAX/lib/images
- $VSIFAX/faxq/<user_ID>/images

Because these files must be located in one of these directories, full path names are not required nor are they supported.

Image positioning

The default location for embedded images is the exact location of the embedded image statement in the text, PCL or PostScript file. In other words, if you placed your embedded image in the middle of a text, PCL or PostScript file, the top-left corner of that embedded image would appear in the middle of the faxed document. Subsequent text, PCL or PostScript data would appear after the embedded image file.

While this may be sufficient for some applications, in most cases more precise positioning is required. This is accomplished by including position coordinates in your embedded image statement as follows:

```
@+IMAGE[<filename.tif>;ax=<pos>{i | m};ay=<pos>{i | m}]
```

Where ax=<pos>{i | m} is the horizontal coordinate and ay=<pos>{i | m} is the vertical coordinate. Specify i if your coordinates are in inches; specify m if your coordinates are in millimeters.

Position coordinates define a horizontal and vertical offset from the upper left corner of the fax document, not from the default image location (i.e., the location of the embedded image statement in the text, PCL or PostScript file). In other words, if position coordinates are supplied, the position of the embedded image statement in the text, PCL or PostScript file is irrelevant.

Examples

This example shows how to embed a TIFF file (logo.tif) directly into a text, PCL or PostScript in the default location (i.e., at the exact point of the embedded image statement in the text, PCL or PostScript file). It will extend down from this point to the full height of the image and up to the full horizontal width of the page.

```
@+IMAGE[logo.tif]
```

This example shows how to embed a TIFF file logo.tif two inches from the left margin and five inches from the top margin. The image will extend

down from this point to its full height and up to the full horizontal width of the page.

```
@+IMAGE[logo.tif;ax=2i;ay=5i]
```

Embedded tags

"Using vfx tags" on page 169 discussed various ways to use tags directly or to pass various text files containing tag statements to the fax server. There is yet another way to use `vfx` tags that does not require ASCII text files.

You can embed `vfx` tags directly into ASCII text, PCL or PostScript files. If `vfx` encounters specific embedded tag sequences in these files, it uses them to create the fax envelope.

Embedded tags are a good way to extend print-to-fax functionality to implement more powerful fax integrations.

Fax merge

Fax merge is a practical example of embedded tags. Basically, you begin by creating a source document in your word processor that populates various embedded tag statements via the word processor's "mail merge" feature. Next, you print this document to a PCL or Postscript file and pass it to the fax server. The fax server recognizes the embedded tags in the printer file and creates the fax envelopes accordingly.

The syntax for embedded tags is:

```
@+VFX[<tag>=<value>;<tag>=<value>;...]
```

Where `<tag>` is a `vfx` tag and `<value>` is the value assigned to that tag. Multiple tag/value pairs are separated by semi-colons.

You can include more than one embedded tag sequence in a PCL or Postscript file and each embedded tag sequence can include multiple `vfx` tags.

Capabilities and Limitations

Embedded tags are scanned only if the file is piped or redirected to `vfx` as `STDIN`.

The `@+VFX` statement must be all uppercase. However, the tag/value statements are case-insensitive.

The entire embedded tag sequence must be continuous—it cannot contain any spaces or explicit line breaks (hard returns).

If you need to include a space in a tag value, use the tilde (~) character. Any tilde (~) character encountered is replaced by a space unless it is escaped (\~).

You can only embed `vfx` tags that store fax envelope (page 1) information. These are sometimes referred to as cover page tags because their primary purpose is to place fax envelope information on fax cover pages. This is a list of tags you can embed:

Tag	Description
cli	client ID
fa1-fa3	from address lines 1 thru 3
fcn	from country name
fco	from company name
fem	from email address
ffn	from fax number
fnm	from name
fvn	from voice number
ntf	note file
sub	subject line
sig	signature file
tco	to company name
tfn	to fax number
tg1-tg4	user-defined tages 1 through 4
tin	custom to information
tnm	to name
tvn	to voice number

▶▶ See “Using vfx tags” on page 169 for detailed information about these and other `vfx` tags.

Examples

This is an example of an embedded local fax number:

```
@+VFX[tfn=555-1212]
```

This is an example of an embedded local fax number, recipient name (with tilde (~) as a space holder) and cover page:

```
@+VFX[tfn=555-1212;tnm=Mr.~Smith;cvr=classic]
```

This example shows how to use both embedded tags and embedded images in a file (`sample.txt`):

```
@+VFX[tfn=5551212;tco=TechSupport]This is an example of
how to send a fax using the embedded commands. The embed-
ded command sends the fax number and the "To Company
Name" to the VFX command.

@+IMAGE[<filename.tif>] This command places an image file
in the location were the command is found.
```

You could redirect this file to the `vfx` command using any of the following commands:

```
vfx < sample.txt
```

```
more sample.txt | vfx
```

```
$ cat sample.txt | vfx
```

```
C:\> type sample.txt | vfx
```

Note: that the first two commands work on any platform, the third command only works on Unix/Linux and the fourth command only works on Windows NT.

Print-to-Fax

Print-to-fax is an extremely versatile way to either deliver a fax envelope to the fax server or prepare a fax envelope so that it can be delivered by another means. While this integration technique is hard to fully automate, it can be used to fax-enable virtually any application with printing capabilities.

There are really two primary ways to fax-enable an application using print-to-fax:

- Use one of the VSI-FAX print drivers.
- Use a normal (non-VSI-FAX) PostScript, PCL or ASCII print driver and save the output to a file.

Using VSI-FAX print drivers

The easiest way to implement print-to-fax is to direct your application's print output to one of the fax print drivers provided with VSI-FAX. Typically, a separate print driver is provided with each fax client.

Once a fax client is successfully installed on a client computer or workstation, you can print to fax directly from any application running on that client computer or workstation simply by choosing the fax print driver is the print destination.

When you do this, the VSI-FAX print driver rasterizes your application information session, prompts you for essential send information (e.g., fax number, recipient name) and delivers the fax envelope to the fax server. In other words, the VSI-FAX print drivers provide both a way to create the fax envelope and a delivery mechanism for getting the envelope to the fax server.

Using conventional print drivers

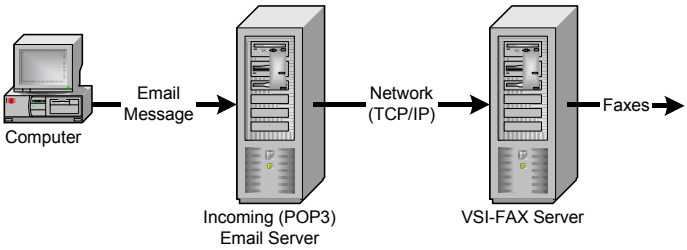
The second way to implement print-to-fax is to direct your application's print to a conventional (non-VSI-FAX) PostScript, PCL or ASCII print driver and save the output to a file.

The advantage to this approach is that you can use any PostScript, PCL or ASCII print driver installed on your system—you are not restricted to using one of the VSI-FAX print drivers.

The disadvantage to this approach is that you must get the PostScript, PCL or ASCII to the fax server—you do not have an integrated delivery mechanism. In most cases, you will need to pass these files to the fax server using `vfx` commands.

Email-to-fax

Email-to-fax is a simple and powerful delivery mechanism that is ideally suited to remote fax integration because you do not need a direct network connection to the fax server, nor do you need access to the fax server file system. All you need is a network connection from the fax server to an incoming (POP3) internet mail server. Of course, your application must be able to send an email message.



Configuration and setup

The email to fax feature is normally setup during VSI-FAX installation. However, if for some reason you did not do this when your fax server was installed, you can do it now by performing the following:

1. Verify the integrity of the network connection between the fax server and your incoming (POP3) internet mail server.
2. Create a dedicated fax email account on your incoming (POP3) internet mail server.

Tip: We strongly recommend creating this account with the user name autofax as it is extremely unlikely that this name is already being used.

The remainder of this chapter will assume that you are using autofax for your POP3 email-to-fax account. If you decide to use another name, substitute that name in our examples.

Important: This email account must be set aside strictly for faxing. The reason for this is that the fax server will assume that any message in this email inbox is a fax and will process it accordingly.Therefore, ensure that the autofax email address is not added to any email groups or corporate mailing lists.

3. Configure the fax server to monitor the autofax email account.

   You can do this using the VSI MMC Fax Server Administration snap-in or by manually modifying settings in `$VSIFAX/lib/vsisrv.ini` configuration file.

   (a) Enter your incoming (POP3) internet mail server host name, fully qualified internet domain name or IP address.

IF You Are	Do This
Using the MMC snap-in	Go to the Fax Server Email Gateway properties and enter the host name, domain name or IP address in the Pop Host name field.
Modifying `vsisrv.ini`	Go to the `VPOPD` section and add the host name, domain name or IP address of your incoming (POP3) internet mail server to the `host-name=` entry.

   (b) Enter the name of the POP3 user account you created in step 1.

IF You Are	Do This
Using the MMC snap-in	Go to the Fax Server Email Gateway properties and enter the user name in the User name field.
Modifying `vsisrv.ini`	Go to the `VPOPD` section and add the user name to the `user-name=` entry.

(c) Enter the password for the POP3 user account (optional).
If you did not create a password for this account in step 1, you do not need to enter a password.l

IF You Are	Do This
Using the MMC snap-in	Go to the Fax Server Email Gateway properties and enter the password in the Password field.
Modifying `vsisrv.ini`	The `vsisrv.ini` password entry is encrypted, therefore it cannot be directly added via a text editor. You must use the `vfxadmin` command line utility to add this entry. Open a command shell and enter the following: `vfxadmin config -a -e VPOPD password <entry>` Where `<entry>` is the actual password defined for the POP3 user account you created in step 1.

Message formats

There are two different acceptable message formats for email messages sent to the autofax account.

Fax number in subject line

If your email message to the autofax account includes a valid fax number or email address in the subject line, the fax server assumes that the body of the email message is plain text.

The syntax for including a fax number in the email subject line is:

`<fax_number>[<subject_text>]`

Where `<fax_number>` is a valid fax number of internet email address and `<subject_text>` is optional subject line text.

The remainder of the mail message is limited to ASCII text and other file attachments that can be natively imaged by the fax server (e.g., PostScript, PCL, text, etc.). For example, you cannot include tag or batch files in this kind of email message. The fax server will simply the image the tag and batch files as plain text.

No fax number in subject line

If your email message to the autofax account does not include a valid fax number or email address in the email subject line, the fax server assumes that the body of the email message is a tag or batch file.

▶▶ Refer to “Tag files” on page 172 and “Batch files” on page 194 for additional information about how to define a fax envelope using these techniques.

Advanced group faxing

Virtually any user can easily send the same fax to a group of recipients using one of our fax clients. It is even practical to do modest amounts of group faxing directly from the `vfx` command line.

However, if you need to send faxes to large groups, send personalized faxes tailored to each recipient or re-use your group faxes, you may want to consider one or more of the advanced techniques described in this chapter.

Which group faxing strategy is best for me?

Before you decide on a particular approach or strategy for your group faxing, consider the following:

Are you using recipient information from a database or spreadsheet program?

Consider using a group file. Simply export your information to a delimited ASCII text file. This strategy is ideal for semi-automated fax blasting to a large recipient list.

Are you creating your fax document with a word processor?

Consider using your word processor's mail merge feature to create a fax merge. While you can't fully automate this technique, most modern word processors have some sort of mail merge feature that can be used to send group faxes.

Do you need to re-use your group fax?

Consider using a template file. You can define the overall layout of your fax with the template file and populate it with recipient information from a group file. If you need to send another group fax to a different group of recipients, simply use a different group file.

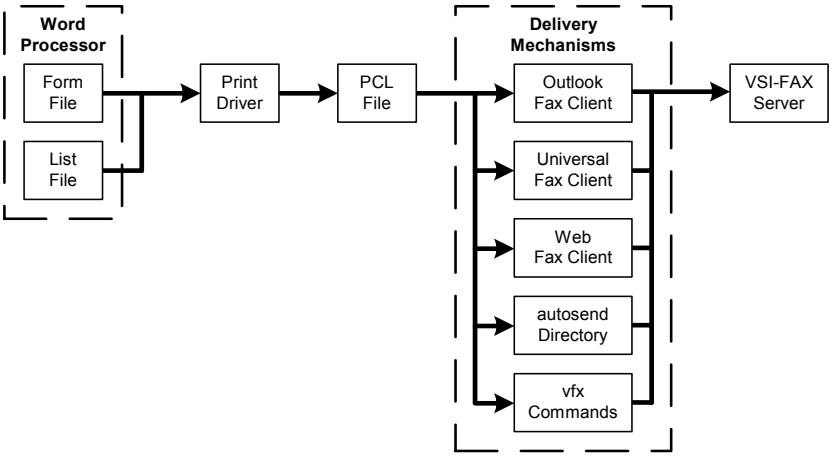
Fax merge

Important: The fax merge feature is not supported by VSI-FAX for Notes.

Fax merge is a special kind of print to fax operation (page 183) that uses your word processor's mail merge feature to send individualized faxes to a group of recipients.

When you print a mail merge job, your word processor creates each individualized document by inserting variable information, such as the person's name, title and address, from a data source document (list file) into a content template document (form file). The software repeats this process as many times as necessary to create and print all the required individualized documents.

This diagram shows how to adapt a basic mail merge feature for fax merge.



Fax Merge Functional Block Diagram

Word processor

The first step in creating a fax merge job is to use your word processor's mail merge feature to create a content template (form file) that will be individualized with information from a data source (list file). In many cases, this data source is a simple text file containing entries for each fax recipient. However,

some word processors support reading this recipient information directly from a database.

In order to adapt your word processor's mail merge feature for fax merging, you must create your form file using a very specific structure. This is because when you send a fax directly from your word processor, the fax server must be able to recognize certain information as destination data and the rest of the information as the actual fax you want to send.

Destination data is embedded into the form file using standard VSI-FAX embedded tags. Embedded fax tags always use this format:

```
@+TAG[<tag>=<value>]
```

Where `<tag>` is a valid send tag and `<value>` is a valid value for that tag. For example, this embedded tag is used to include a classic cover page with a fax:

```
@+TAG[cvr=classic]
```

See “Embedded tags” on page 179 for additional information.

Important: All embedded tag statements must have 10 pt. Courier typeface applied to them. Otherwise, the fax server will image the embedded tag statements as plain text.

Example form and list files

These are example Microsoft Word form and list files. They will be used to send a simple fax survey to Mr. Smith and Mr. Jones.

@+TAG[tfn=<<FaxNumber>>		Name, Location, FaxNumber
@+TAG[cvr=classic]		Smith, London, 5551212
---------Page Break ----------		Jones, New York, 5551213
Hello Mr. <<Name>>		
Do you still live in <<Location>>		

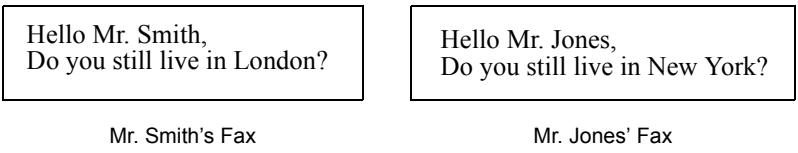
Notice that the example form file contains an embedded fax number (`@+TAG [tfn=«FaxNumber»]`) and an embedded cover page designation (`@+TAG [cvr=classic]`), followed by a page break. This first page break tells the fax server that all the information in the document before the page break is destination data, not part of the actual fax. Also notice that the embedded fax number value is actually a field that will be read from the list file.

Note: The entire embedded tag area of the form file (i.e., everything before the first page break) must have the Courier font applied to it. Otherwise, the fax server will image the embedded tag statements as plain text.

The remainder of the form file is the actual fax template that will be individualized for each recipient. This includes a salutation using a name field (`«Name»`) and the survey question using a location field (`«Location»`).

The sample list file is a simple text file. Each data record is separated by a hard return; each value within that record is separated by a comma. Typically, the first record in a list file contains the header labels for the remaining records. In this case, header labels `Name`, `Location` and `FaxNumber` tell us that each subsequent record (line) will contain these three pieces of information (values) in this order.

This is how each person's fax survey will look:



Print driver

Normal mail merge jobs are sent to a hardcopy printer. Fax merge jobs must be imaged into a single PCL file. This PCL file must contain all the individualized pages for all fax merge recipients. There are two ways to accomplish this:

Send your word processor's mail merge output directly to a VSI-FAX print driver. This will automatically create a single PCL file that can be sent to the fax server via one of the fax clients.

Use your computer's Print to File command to save your word processor's mail merge output to a PCL file. The advantage to this method is that you can use this with various server integration techniques (e.g., `vfx` commands, tag and batch files, autosend, etc.) to submit the PCL file to the fax server.

Delivery mechanisms

After the PCL file has been created by the print driver, it is ready to be submitted to the fax server for fax merge processing. In order to have the fax server perform special fax merge processing on it, you must deliver the PCL file as a fax attachment in a fax envelope with faxmerge as the fax number. There are two basic ways to do this:

If you directed your word processor output to one of the VSI-FAX print drivers, a fax form will be displayed and the PCL file will automatically be included as an attachment. If you are using the Outlook Fax Client, enter the following MAPI command in the To field:

```
[Fax:FAXMERGE]
```

If you are using the Universal or Web Fax Client, simply enter the word `FAXMERGE` in the To field.

If you printed your word processor output to a PCL file, you can pass that file to the fax server using various delivery mechanisms (e.g., `vfx` commands, tag file, autosend, etc.). Two tags are required:

```
tfn="faxmerge" fll="my_attachment.pcl"
```

Where `my_attachment.pcl` is the mail merge PCL file created by the print driver.

Fax server

Anytime the fax server receives a fax with a fax number of faxmerge, the fax server immediately knows that this is a fax merge job, not a normal fax request. The fax server assigns this job a group fax ID and begins fax merge processing.

Batch files

Batch files are similar to tag files. The primary difference is that they can send entirely different faxes to different recipients. This is done by defining several sections within the batch file:

- A *common section* (containing common information for all fax recipients)
- One or more *recipient sections* (containing personalized information for each fax recipient)

▶▶ See "Tag files" on page 172.

File structure and syntax

Consider a simple batch file:

```
fnm=MyName
fco=MyCompany
@+COMMON

tfn=5551212
tnm="Mr. Smith"
fll=hello.txt
@+END

tfn=5551213
tnm="Mr. Jones"
fll=goodbye.txt
@+END
```

Common entries always appear at the beginning of the file and continue thru the `@+COMMON` entry. These two entries (`fnm=MyName` and `fco=MyCompany`) define the sender's name and company, respectively. A common section is optional.

The rest of our sample batch file contains two recipient sections, one for Mr. Smith and one for Mr. Jones. Each recipient section defines a different fax number, fax name and file attachment. Notice that each recipient section ends with a `@+END` entry.

Just as with tag files (page 173), when you define more than one recipient (which you always do with a batch file) or more than one fax attachment, your batch file must be constructed in a particular format or that fax will not be properly sent.

1. Each recipient block must start with a `tfn` tag. All subsequent information (e.g., name, company name, etc.) is assumed to be for that recipient until the next `tfn` tag is encountered.
2. Each file inclusion block must start with one of the following tags:

Tag	Description
fdl	Local folder.
fds	Server folder.
fll	Local file attachment.
fls	Server file attachment.
fvl	Local overlay.
fvs	Server overlay.
ovl	Local overlay.
ovs	Server overlay.
sig	Signature file.

All subsequent file-specific information is assumed to be for that recipient until the next file inclusion tag is encountered.

Delivery and processing

There can be only one batch file per fax request (e.g., `vfx` command).

All other command line arguments and tag files are processed before the batch file is processed. Therefore, any options or tags following the `-B` option will actually appear in the fax request tag list before any tags in the batch file.

Files referenced in the batch file are processed before files referenced on the command line (including any files referenced in any tag file).

Fax envelopes are created for each recipient in the following order:

- Tag list from the command line

- Tag list from the common section
- Tag list from that recipient section
- Files referenced in the batch file
- Files referenced on the command line

If the last `@+END` entry is missing from a batch file, one is assumed.

Group Files

Often, when you are sending a group fax, your recipient information is actually stored in some sort of database. Most databases support some sort of data export to a neutral file format, typically some form of "delimited ASCII."

The VSI-FAX group mechanism allows you to pass these delimited ASCII files to the fax server. The fax server will use recipient information in the file to send the group fax.

File Structure and Syntax

Group files have a very simple structure. Consider the following sample group file:

```
Delimiter= ,
Tagnames=tnm, tfn

Mr. Smith, 5551212
Mr. Jones, 5551213
```

The first line contains a delimiter statement. The default delimiter is the pipe `|` character. If your database exports to pipe delimited ASCII format, you do not need to add this line to your group file.

The second line contains a tag listing. This defines the tag order that will be used to retrieve information from the remaining records in this file. In this example, two tags are used: to name (`fnm`) and fax number (`tfn`).

The remaining lines in the group file contain the name and fax number for each recipient of this group fax. In this case, there are two recipients: Mr. Smith and Mr. Jones.

Delivery and Processing

Group files must be identified to the fax server using the `vfx -g <srvr_grp_file>` or `-G <phonebook_group_alias>` options. The `-g` option is used when the group file is located on the fax server in the `$VSIFAX/lib/groups` directory; the -G option is used when a phone book group alias is designated.

Fax merge using group and template files

Although template files are primarily used to customize various email messages sent by the fax server, they work especially well with group files. The combination of the two is ideally suited for sending highly personalized faxes to large groups.

You can use the group file to define various personalized pieces of information for each recipient (this information it typically retrieved from a database and exported to some delimited ASCII text file).

You can then use a template file to merge the information from the group file into a common fax form.

When you send a group fax using a template file, the template file must be the first file attachment defined in the fax envelope. Otherwise, it will be imaged as a plain ASCII text file.

Because template files can be plain ASCII text, PostScript or PCL files, all of which can be natively imaged for faxing, the fax server must have some way of knowing when to perform the special processing needed to interpret tag statements inside a template file. This is done by specifying tag processing with the `vfx -t fcv=tags` option. This can be done using the `vfx` command line, in a tag or batch file or by using embedded commands.

Consider again the simple group file `groups.txt` from one of our previous examples:

```
Delimiter= ,
Tagnames=tnm, tfn

Mr. Smith, 5551212
Mr. Jones, 5551213
```

Consider also the example template file:

```
Dear ${tnm:Sir},

A fax was sent to ${tfn} concerning ${sub:your recent
order}.

Sincerely,
${fnm:VSI-FAX}
```

To send these files to the fax server, enter:

```
vfx -g groups.txt -t fll=confirm.txt -t fcv=tags
```

This is how each person's fax will look:

Dear Smith, A fax was sent to 5551212 concerning your recent order. Sincerely, VSI-FAX

Dear Jones, A fax was sent to 5551213 concerning your recent order. Sincerely, VSI-FAX

Notice that the actual names and fax numbers were used from the group file. Notice also that because the group file did not specify a subject (i.e., `sub` tag) or send name (i.e., `fnm` tag) that the default subject, “your recent order” and send name VSI-FAX were used, respectively.

Forms overlay

You can specify forms to be overlaid onto selected pages of the resultant fax file. These forms must be a TIFF file. More than one overlay file can be specified.

A form file is specified using the tag `ovl=<form_name>` or `ovs=<form_name>`, depending on whether the overlay form is local or on the server. An optional page range can be specified, which will indicate onto which pages of the resultant fax file the form is to be overlaid. If no page range is specified, the form will overlay all pages in the resultant fax file. The page range is specified with the `fpg=<page_range>` tag. The first page of the form is the only page used in the overlay process. This page is overlaid on all specified pages in the resultant fax file.

For example, a letterhead could be overlaid onto the first page of a fax with this command:

```
vfx ... -t ovl=letterhd.tif -t fpg=1 ...
```

An invoice form could be overlaid onto all pages except the first one with this command:

```
vfx ... -t ovl=invoice.tif -t fpg=2- ...
```

You could overlay both a letterhead and an invoice form with the following command:

```
vfx ... -t ovl=letterhd.tif -t fpg=1 -t ovl=invoice.tif -
t fpg=2 ...
```

Note: An overlay form can be specified in a tag or batch file (similar to all other VSI-FAX tags).

The management of overlay forms can be simplified by combining them into a single multi-page file. In this way, each page of the file corresponds to a particular overlay form (such as a purchase order, invoice or past due notice) that can then be referenced by its page number. This eliminates the need to manage multiple overlay files and allows integrators to maintain a consistent reference when specifying which overlay form to use. Furthermore, changes can be made to an existing forms file without requiring it be rebuilt from scratch, as long as it maintains the same page order sequence. By consolidat-

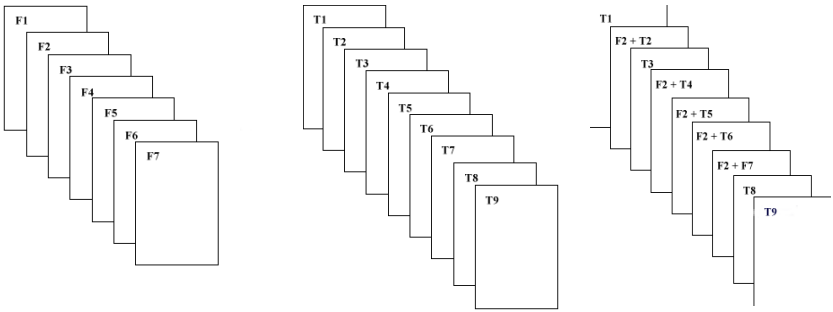
ing the overlay forms into a single forms file, you have the consistency of a known filename and the flexibility to specify the overlay page number (or numbers) to be used on the target document.

Now you are ready to integrate the overlay utility into your application's VSI-FAX interface. You can either specify that a single form be overlaid onto multiple pages of the target file, that multiple overlays be overlaid onto multiple pages or that a single overlay be overlaid onto a page range or selected pages.

Single overlay

This example begins with two files: form overlay `form1.tif` (pages F1-7) and text overlay `target.tif` (pages T1-9).

`Form1.tif` `target.tif` `result.tif`



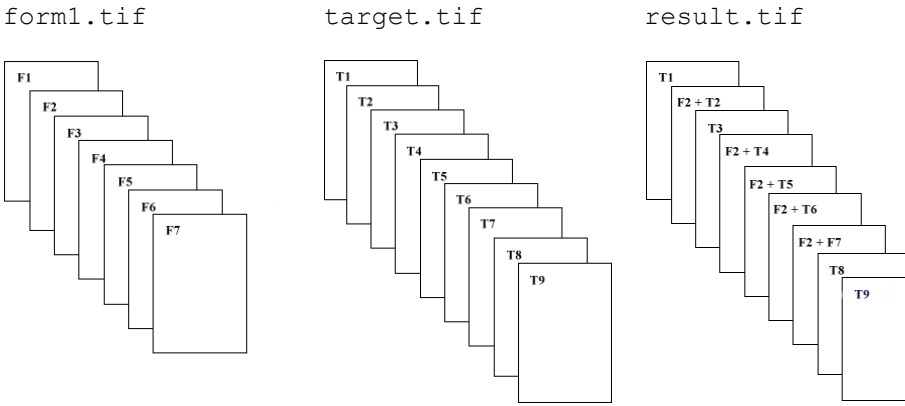
The `result.tif` output file is created by entering the following on a single line:

```
vtifftool overlay -E fine -o result.tif form1.tif:2 target.tif:2,4-7
```

Notice that page 2 of `form1.tif` has been overlaid onto pages 2, 4, 5, 6 and 7 of `target.tif` to produce the `result.tif` output file When this file is faxed, the fax will appear as if the form overlay and the text overlay are one a single image.

Multiple overlays

To perform multiple overlays from both `forms1.tif` and `target.tif` to `result.tif`, type the following:



The `result.tif` output file is created by entering the following on a single line:

```
vtifftool overlay -E fine -o - forms1.tif:2 tar-
get.tif:2,4-6 | vtifftool overlay -E fine -o result.tif
forms1.tif:5 -:7,9
```

Because the vtifftool overlay utility can only process one overlay operation at a time, the first execution of vtifftool uses a - character as the argument to its output switch (-o). This redirects output to the standard output device (stdout). The output is then piped to the second execution of the vtifftool, which reads it in as standard input (stdin), performs the overlay operation onto it, then writes its output to the file result.tif.

In this example, the - character in the final vtifftool argument (-:7,9) tells vtifftool to read from the standard input device (stdin) instead of a file.

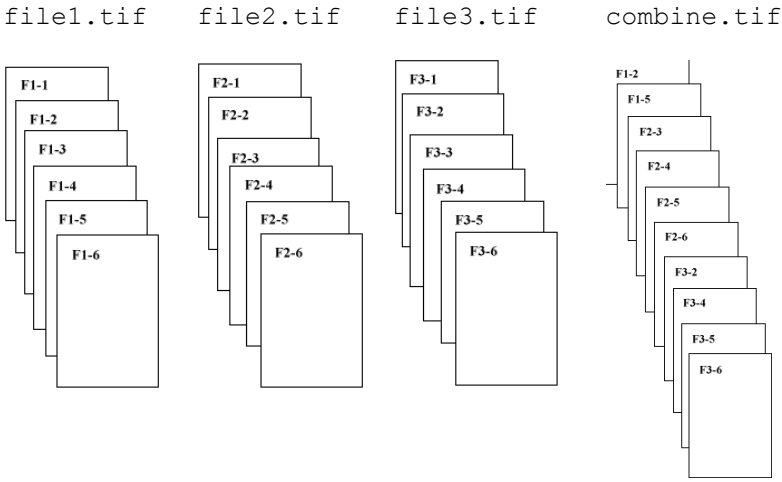
The result of this procedure is that page 2 of forms1.tif has been overlaid onto pages 2, 4, 5, and 6 of the target.tif. The output of this operation has then been piped to the second procedure, in which page 5 of forms1.tif has been overlaid onto its standard input to create the output file `result.tif`.

The original `target.tif` and `forms1.tif` are left in their original state and can therefore be reused later.

Selective merging

Under certain circumstances, you may need to extract selected pages from one received fax file and merge them with a second file to create a new output file that can then be faxed from VSI-FAX. In this instance you would use the `merge` option of the `vtifftool` utility, which will allow you to select specific pages from multiple files and merge them into a single document.

This example begins with three multi-page files, `file1.tif` (page F1), `file2.tif` (page F2) and `file3.tif` (page F3). A new file `combine.tif` will comprise pages 2 and 5 from `file1.tif`, pages 3 through 6 from `file2.tif` and pages 2, 4, 5, and 6 from `file3.tif`.



The `combine.tif` output file is created by entering the following on a single line:

```
vtifftool merge -E fine -o combine.tif file1.tif:2,5
file2.tif:3-6 file3.tif:2,4-6
```

Notice that `combine.tif` has been created, which contains pages from `file1.tif, file2.tif` and `file3.tif` arranged in the order that was specified. The `combine.tif` file can now be faxed with VSI-FAX like any other faxable file.

Creating electronic business forms

Before you begin converting your business forms into electronic image files, you need to organize these forms in a page sequence for later reference. You can either scan or fax the forms to create the overlays. Each method is discussed below.

Note: You must consolidate all your forms into a single file and maintain the original page order as they are converted to a TIFF image file.

Manual fax scanning

Collect your forms together in the proper page sequence, and fax them to your fax server. View the received fax file to confirm that each page is intact and aligned correctly. You can expect a slight shrinkage (about 1/6 inch) of the scanned image versus the original document due to the scan line rendering. This is a normal occurrence with any faxed document. The slight shrinkage should not matter, Because the size of the text overlays will be in proportion to the original document.

You may need to make small positioning adjustments to the text before it overlays exactly onto your imaged form. You can do this with either PCL5e (Hewlett Packard LaserJet) or PostScript (Level 1) codes that use both horizontal and vertical positioning.

The final step is to remove the fax header that was added to each page during transmission. To do this:

1. Log in as root or vsifax and set the VSI-FAX environment.

Note: This example assumes that you renamed the received form file as `form.tif` and that this file is located in `($VSIFAX/faxq/vsifax)`, which is the Fax Box directory of user vsifax.

---

2. Use the `vtifftool` utility to remove the fax header from the multi-page `form.tif` file as follows:

```
cd $VSIFAX/faxq/vsifax
vtifftool clear -E fine -m 0.3i -o overlay.tif form.tif
```

The purpose of `-m 0.3i` is to instruct vtifftool to clear 0.3 inches from the top of the page. You may have to reduce this amount to 0.2 inches `(-m 0.2i)` depending on the output of your particular fax machine.

Scanner support

You can also use a document scanner to combine forms into a single TIFF image file that can be saved on the VSI-FAX system. Keep in mind that the TIFF file type must be set to one supported by VSI-FAX, as defined by these parameters:

Compression	CCITT G3 (required) Aldus G3 Mac PacBits uncompressed
Maximum Resolution	200x200 dpi
Imaging	Black and White (No Grayscale Support)

Creating faxable signature and logo files

VSI-FAX supports both shared and private logo and signature files. Files that you want to include in a document must reside in one of two locations:

Public (globally available) files are stored in the `$VSIFAX/lib/images` directory.

Private (accessible only by the owning user) files are stored on the user's local hard drive. To create a signature or logo file, follow these steps:

1. Do one of the following:

If	Do This
Creating a signature file	Write your signature in black ink on a blank piece of white paper. The signature should be no less than one inch from the top and one inch from the left of the page.

If	Do This
Creating a logo file	Copy your logo onto a faxable piece of paper so that the logo is no less than one inch from the top and one inch from the left of the page.

2. Fax this page to your VSI-FAX user account from a physical fax machine. Make sure you use fine resolution mode in order to obtain the best possible image.

Note: By default, all received faxes will be stored in user vsifax's inbox (`$VSIFAX/faxq/vsifax`) in TIFF file format.

3. Open the received TIFF file and measure the x and y coordinates of the upper-left corner of the logo or signature, as well as the image area width and height.
4. Create a faxable signature or logo file using the `vtifftool cut` command.

   For example, to create a faxable logo file (`logo.tif`) by cropping all unused white space from the previous example, enter the following on a single line:

   ```
   vtifftool cut -E fine -x 1.5i -y 1.0i -w 5.25i -h 2.0i -o
   logo.tif
    rawlogo.tif
   ```

   The output file contains only the signature, so the content of the file is only 5.25" wide and 2" high. All unused white space and additional file information has been removed.
5. To make this a public image file (available to all VSI-FAX users), upload it to the `$VSIFAX/lib/images` directory using the `vupload image` command.

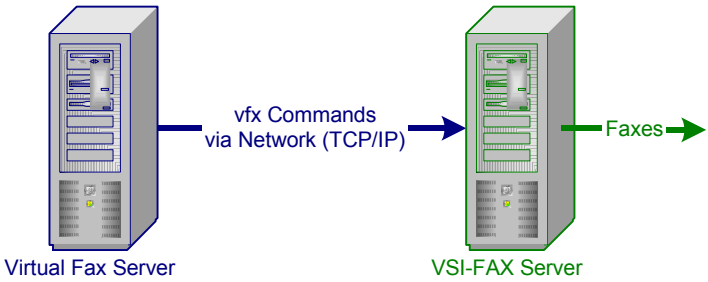
   For example, to upload the logo file from the previous example, enter:

   ```
   vupload image logo.tif
   ```

   You are now ready to include your signature or logo file in a faxable document.

Virtual fax server

The virtual fax server is a remote `vfx` command line client. It includes all the functionality of a full fax server except that you cannot connect fax devices to it or send faxes directly from it. You must connect your virtual fax server to a full fax server, via a network, to complete your integration.



Do I need this?

If you intend to use `vfx` commands as your delivery mechanism (page 4) and you need to issue these commands remotely (i.e., from a different IP address than the fax server IP address), you must install a virtual fax server on the remote computer or workstation.

Capabilities and limitations

Once the virtual fax server is installed, you can issue `vfx` commands just as if you were logged directly into the fax server. In fact, you have access to all the commands and utilities available in a full fax server (e.g., administrative commands and reporting utilities).

However, you cannot connect fax devices directly to a virtual fax server.

To submit faxes from the Virtual Fax Server (VFS) machine a VFS license must be entered on the full fax server. When the VFS license is added on the full fax server the IP address of the VFS machine must be provided. Any user submitting faxes from the VFS machine must be a licensed VSI-FAX user.

When issuing VSI-FAX command from the VFS machine you can direct the commands to the full fax server by adding a -H <hostname or IP> to the

command line or by setting the Hostname parameter in the vsifax.ini file to the hostname or IP address of the full fax server.

Requirements

Virtual fax servers can be installed on any supported platform (e.g., Linux, Unix, or Windows NT/2000).

Virtual fax servers use a special Virtual Fax Server license, which you must obtain from your VSI-FAX authorized reseller or directly from Esker before you can install it.

In order to send or receive faxes, the virtual fax server and the full fax server must share the same local area or wide area network.

⏩ Refer to “Sending a test fax to a fax machine” on page 48 for virtual fax server installation instructions.

lp spooler

The `vfx` command is modeled after the Unix `lp` spooler command. The similarities between the two allow you to submit a fax as easily as printing a document.

Integration is accomplished by using an lp-compatible printer interface script. All Unix and Linux operating systems, with the exception of IBM AIX, support ASCII text printer interface scripts. IBM AIX systems use a database architecture that requires their printer interface scripts to be compiled. For AIX IBM interface scripts, refer to the IBM AIX documentation for additional information about compiling interface scripts.

Note: This integration technique is not available to VSI-FAX for Notes installations because VSI-FAX for Notes only runs on Windows NT/2000 platforms.

Creating a printer destination for faxing

In order to use the lp spooler for fax interrogations, you need to create a printer destination called fax. The name can be anything that works for your environment. This printer destination is created the same way a regular printer would be created. The fax printer that you create should have a device port of `/dev/null` and a printer type of ASCII (or another generic type).

When you create the fax printer destination, the operating system automatically puts a default printer script for that printer in the interfaces directory. On most, but not all Unix and Linux systems, the interfaces directory is:

```
/usr/spool/lp/admins/lp/interfaces
```

Refer to your operating system documentation for additional information about adding an ASCII printer to your system.

Creating a custom printer interface script

Once you have successfully added the new fax printer destination to your system, you need to replace or modify that default interface script to suit your particular environment and fax requirements. There are two methods

for implementing this interface script, each with its own unique advantages: LP faxing and LP merge faxing.

lp faxing

The first and most common option is to use the Unix `lp` command. Typically, the `lp` command accepts several command line options that work well for sending a fax. In order for lp faxing to work correctly, two arguments must be passed to the interface script:

- Fax number
- Name of the file you want to fax

The Unix `lp` command allows the use of the `-o` argument, which we will use to specify the fax number. The filename can either be explicitly listed or a file can be redirected to the `lp` command. Either method works for lp faxing.

When creating the interface script. The most important line is the `vfx` command line. This is where various options can be added to make the lp faxing work in your environment. The sample script (page 210) only uses a few options (login name, fax number and the file name). Additional options could be added that would include a cover page and use a user's default profile settings to send the fax. All command line options available to the `vfx` command are also available within the interface script.

▶▶ Refer to your *VSI-FAX Reference Addendum* for additional information about the `vfx` command.

lp merge faxing

The second method is the lp merge faxing method, which allows you to create a mail merge text stream to personalize information to send to multiple destinations.

Furthermore, you can use this script to overlay forms onto selected pages of the document (such as purchase orders or quotes).

lp faxing sample interface script

This sample interface script replaces the default script used by the fax printer destination. It allows users to specify the fax number on the `lp` command line. This allows the specified document to be faxed.

Important: The sample script that is shown here is a sample. It will not work in every possible instance. It does demonstrate how and what an interface script should do.

When using the Unix `lp` command for faxing, a command line would typically be something like:

```
lp -d fax -o <fax_number> <file_name>
```

For example, to fax the `/etc/motd` file to fax number 111-222-3333, enter:

```
lp -d fax -o 111-222-3333 /etc/motd
```

Sample script:

```
# Set the VSI-FAX environment
. /etc/vsifax3.sh
# Store the login name of the submitter
LOGIN=$2
# Extract the fax number
FAXNUM="$5"
# Extract the file to be faxed
shift 5
FILES="$*"
# Submit the fax request
vfx -U $LOGIN -n "$FAXNUM" -E fine $FILES 2>&1 | mailx -s
<subject> $LOGIN
# Exit script
exit 0
```

Note: In the previous example script, `<subject>` is any user-defined character string you want for your email subject line.

lp merge faxing sample interface script

This script allows you to send different sections of the file to different recipients by creating a text stream. VSI-FAX provides an embedded fax command that allows you to specify the fax dialstring, the coversheet information, and the coversheet to use for each recipient. The order in which fax commands appear is critical to its successful implementation. Below is a

list of available tag values that can be specified using the `@+VFX` embedded command:

Tag	Description
evr	Coversheet to use
tfn	Recipient's fax number
tnm	Recipient's name
tco	Recipient's company
ffn	Sender's return fax number
fnm	Sender's name
fco	Sender's company
fvn	Sender's voice number
sub	Coversheet subject line limited to a maximum of 63 characters

To utilize embedded commands, include them within the text data stream at the appropriate points within the pages.

▸▸ Refer to "Tag files" on page 172 and "Batch files" on page 194.

The power of lp spooler integration is the ability to specify which pages go to which recipients and create multiple fax requests when necessary.

Sample Printer Interface Script:

```
# Set the VSI-FAX environment
. /etc/vsifax3.sh
# Store the login name of the submitter
LOGIN=$2
# Extract the file to be faxed
shift 5
FILE=$1
# Submit the fax request
vfx -U $LOGIN -E fine <$FILE 2>&1 |
vmail &LOGIN
```

WordPerfect integrations

Because many of our customers want to fax enable WordPerfect on Unix, we have created two integrations using WordPerfect macros and our fax print driver.

Note: This integration technique is not available to VSI-FAX for Notes installations because VSI-FAX for Notes only runs on Windows NT/2000 platforms.

X Windows versions

This VSI-FAX integration for WordPerfect 7/8 is only designed to work with graphical X Windows versions of WordPerfect. Also earlier versions of WordPerfect may work but have not been tested.

Files

The graphical integration consists of these files.

faxwpx.sh	Script that builds a UI and faxes document.
vsipclx.prs	Print driver for WordPerfect.

Configuring the integration

In order to use this integration, perform this configuration procedure:

1. Login as root. (or `su` to root).
2. Change directory to the WordPerfect `/shbin10` directory.
3. Execute the `xwpdest` program to create a new printer destination.

   The printer destination must have a custom spool command. The command must be:

   ```
   $VSIFAX/lib/wp/faxwpx.sh <F> pcl
   ```

4. Save this destination and exit `xwpdest`.

5. Create a printer. The printer can either be a system printer or a personal printer. It must be a PCL type printer. Either the `$VSIFAX/lib/wp/vsipclx.prs` driver or the default `hplj.prs` file can be used.

   When setting up the printer it must use the VSI-FAX destination that was created in steps 3 through 4.

   Once the printer is setup, the integration is ready to be used.

Using the integration

To fax a document from within WordPerfect, simply print the document to the VSI-FAX fax print driver. After the document is converted to PCL format, a dialog box will open and allow you to enter the recipient information.

Character-based versions

This VSI-FAX integration for WordPerfect 7/8 is only designed to work with non-graphical (character-based) versions of WordPerfect. Also earlier versions of WordPerfect may work but have not been tested.

Files

The non-graphical integration consists of these files.

vsi.wpm	WordPerfect macro that calls the imaging and faxing script.
faxwpc.sh	Script used for imaging and faxing.
vsipcl.prs	PCL print driver for WordPerfect.
wpc.config	Configuration for defining vsiwp.sh.
vsiwp.en	Environment settings needed by faxwpc.sh; created from the wpc.config script.

Configuring the integration

1. Login as root (or `su` to root).

   You must know the full path to the WordPerfect installation directory.

2. Change directory to `$VSIFAX/lib/wp`.

3. Execute the `wpc.config` script.

4. When prompted, enter the path to the WordPerfect installation.

Using the Integration

To fax the current document from within WordPerfect, simply execute the VSI-FAX macro as follows:

1. Choose Tools > Macro > Execute.
2. Enter `VSI-FAX` and press `ENTER`.

   You will then be prompted to enter fax recipient information. You will also be able to select a cover page from the currently installed cover pages.
3. After entering the fax recipient information, you will be given a fax request ID for tracking this request.

Notes

You must save your file before you can fax it.

Some WordPerfect installations use the fast-save feature. This is not compatible with this integration. If errors are shown about fast-saved files. You must turn off this feature.

This integration uses the `wprintc` and `wprint7c` utilities to convert the WordPerfect document to PCL format. In some cases the WP7 `wprint7c` utility returns an `invalid port specified` message. If this occurs, the `faxwpdoc.sh` script can be modified to correct this problem. The script can be changed to use the WordPerfect `wprint` command instead of `wprint7c`. The original file includes a likely syntax for this fix.

The `wprintc` and `wprint7c` programs can cause the WordPerfect print spooler to improperly handle some documents. This can often occur when the "fast-save" feature is turned on. If the `Printer action required` message appears, this usually indicates that some job is stuck in the print spooler. To clear the print spooler:

1. Cancel any pending jobs using the Printer menu.
2. Close WordPerfect.
3. Remove the `$HOME/.wprc` directory.
4. Restart WordPerfect.

5. Retry your fax.

   This integration only works with non-graphical (character-based) WordPerfect versions 7.x and 8.x. Earlier versions of WordPerfect might work. If you are trying to use an earlier version WordPerfect, you will probably need to modify the `faxwpdoc.sh` script to use the proper command for converting the file.

Using XML-F

Entensible Markup Language (XML) comprises various Data Type Definitions (DTDs). Each DTD is a set of tags for describing a particular collection of data. In XML, one DTD is created for each collection of data that requires description. For example, to create an XML language for Accounts Payable, one DTD would be required to describe the venders, one to describe the purchase orders, and another to describe invoices, etc.

A collection of data is generally accompanied by its DTD whenever it is stored or transferred from one place to another, creating "documents that know themselves." The inclusion of the DTD means that the content or meaning of the data is embedded in the document in a way that is human-legible and easily interpreted by any XML enabled software.

Esker has gone one step further and has proposed a set of DTDs for network fax transactions called XML-F. This interface is a simple, powerful way to pass fax transactions to and from fax servers. It is based on four simple structures that allow any conforming application to:

- Send a fax
- Get the status of a sent fax
- Cancel a fax
- Get fax resources

XML-F uses eight XML document types to implement these four features: four requests and four responses. Each feature has a corresponding request and response document.

For clarity, the examples in the remainder of this chapter uses simplified XML-F document types.

⏩ Refer to your *VSI-FAX Reference Addendum* for complete DTD listings.

The xmlf command

Synopsis

```
$VSIFAX/bin/xmlf [-h <URL>] [-o <file>] [-t {html | text
| xml}]
```

```
<file> [<attachment>]
```

Description

`xmlf` is the transport that sends a fax file to the server for transmission.

Options

-h	<URL>	Fax server Universal Resource Locator (URL). Default is local host.
-o	<file>	The name of the file to put the response from the send operation. Default is displaying the response on the screen.
-t	{html | text | xml}	Response format.
<file>		The name of the XML file you are sending to the server.
<attachment>		The name of a file you want to add.

Notes

When entering a URL, the following format is required:

```
[transport://] <host> [:port number]
```

Where:

transport:	Defaults to `vxmld`.
<host>	Name of the fax server.
port number	Port number that the fax server uses to send faxes.

Fax-submit document

The fax-submit document describes the elements necessary to set up and send a fax on an XML-F compliant system. The fax-submit document has the following basic structure (this example is simplified):

```
fax-submit
  account                              (required)
  id                                   (required)
  subid                                (zero or one)
  mail-address                         (zero or one)
  recipient                            (one or more)
    personal-name                      (zero or one)
    company-name                       (zero or one)
    fax-number or canonical-fax        (required)
    voice-number or canonical-voice    (zero or one)
  sender                               (required)
    personal-name                      (required)
    company-name                       (zero or one)
    fax-number or canonical-fax        (zero or one)
    voice-number or canonical-voice    (zero or one)
  subject                              (zero or one)
  content                              (required)
    body                               (zero or more)
    application-reference              (zero or one)
    command-reference                  (zero or one)
```

Element	Description
account	The account contains the information necessary to identify the user of the service. Authentication is left to the transport and implementation, the account structure contains an ID intended to identify the billing entity and a sub-ID to be used for grouping of departments or users within the billing entity. The account also specifies a mail-address that is an email channel available for the fax service to use for error or other messages.
recipient	The recipient defines one or more people for whom this fax transmission is ultimately intended. A fax submission must have at least one recipient, however, the recipient need only have fax-number defined.
sender	The sender entry is required, with at least the personal name entered for a sender.
subject	The subject is optional.
content	The content element contains zero or more body elements. Body elements must contain a filename attribute and may specify associated content-type (RFC 2046) and content-transfer-encoding (base64 or none).
application reference	An application-reference tag is defined to permit the submitting application to provide an arbitrary application-specific reference to this fax request. This reference tag may be used to request status information on this fax submission.

Finally, in XML-F, all requests carry a command-reference, which is intended for the sending system to uniquely identify the particular request. This is useful for debugging and matching up particular responses with particular requests when the system is used asynchronously.

The following is an example of a completed send document:

```
<?xml version="1.0"?>
```

```
<!DOCTYPE fax-submit SYSTEM "fax-submit.dtd">
<fax-submit resolution=”fine” coversheet =”yes”>
      <account>
            <id>
                  Filmore5455
            </id>
            <subid>
                  David Filmore
            </subid>
            <mail-address>
                  filmore@esker.com
            </mail-address>
      </account>
      <email-notification when="on-success">
                  filemore@esker.com
      </email-notification>
      <sender>
            <personal-name>
                  David Filmore
            </personal-name>
            <company-name>
                  Willy Wonka Chocolates, Inc.
            </company-name>
            <fax-number>
                  237-0998
            </fax-number>
            <voice-number>
                  238-9873
            </voice-number>
      </sender>
      <recipient>
            <personal-name>
                  Rob Juergens
            </personal-name>
            <canonical-fax>
                  <country-code>
                        011
                  </country-code>
                  <area-code>
                        987
```

```
                    </area-code>
                    <local-number>
                          242-1234
                    </local-number>
              </canonical-fax>
              <voice-number>
                    011-987-242-5678
              </voice-number>
        </recipient>
        <subject>
           Good Looking XML...
        </subject>
              <content>
                 <body filename=”inline.txt”>
Some people are destined to discover that when they
get to the end of time, there they are.
                 </body>
                 <body filename=”inline.txt”
                    content-type=”text/plain”
                    content-transfer
encoding=”base64”>

VGhpcyB3YXMgYmFzZTY0IGVuY29kZW

QgPGludmFsaWQ+PC9pbnZhbGlkPg==
                    </body>
                    <body filename=”inline.txt”>
This is some text that we think would make for a
wonderfully interesting fax body had anyone had
time to actually think up something fun and
interesting to say. Or should anyone ever decide to
read it.
                    </body>
              </content>
              <command-reference>
                    xxs234234s
              </command-reference>
</fax-submit>
```

Upon successful receipt of a valid fax-submit, a fax-submit-response will be returned.

Fax-submit-response document

Upon receipt of a fax-submit request, an XML-F service should respond by providing a fax-submit-response. This response is used to acknowledge receipt of the fax submission upon parsing and validation of the request. The response is used to provide a server-side reference. It is comprises the following structure (this example is simplified):

```
fax-submit-response
      request-results                (required)
      service-reference              (required)
      application-reference          (zero or one)
      command-reference              (zero or one)
```

Element	Description
request results	The request-results provide information on the results of the fax-submit. Request-results contain attributes to indicate the status of the request (normal, warning, or failed) and the reason for the status. The data attached to the request-results entity provides an ad hoc message back to the application.
service reference	This is a unique reference assigned to a particular fax submission by the service provider. This is the best reference for the user application to use when requesting status or when canceling a request.
application reference	This is the optional (but recommended) reference that the submitting application assigned to the fax request triggering this response. This reference may be used to get status or to cancel the request if the application has not received a fax-submit-response (and therefore no service-reference would be known).

Fax-status document

The fax-status document is used by an application to request status on a service about a particular fax request. The fax-status request can be used to request short and detailed status reports in either XML or text-formatted

form. As well, the fax-status request can ask the service to mail the resulting report to an email address.

The application can either use the application-reference or the service-reference when referring to this request. This permits the submitting application to issue status requests without having to wait or process a fax-submit-response document prior to asking for status. In the event the fax-submit-response is never received, the application must use the application-reference to get information on the request.

The fax-status comprises the following structure (this example is simplified):

```
fax-status
    account                          (required)
    id                               (required)
    subid                            (zero or one)
    mail-address                     (zero or one)
    email-to                         (zero or more)
    service-reference              (must specify either
    application-reference          service or app ref)
    command-reference                (zero or one)
```

This is an example of a completed fax status document:

```
<?xml version="1.0"?>
<!DOCTYPE fax-status SYSTEM "fax-status.dtd">
<fax-status results-format="xml" report-
type="full">
      <account>
                  <id>
                              Filmore5455
                  </id>
                  <subid>
                              David Filmore
                  </subid>
                  <mail-address>
                              filmore@esker.com
                  </mail-address>
      </account>
      <service-reference>
                  1011
      </service-reference>
      <command-reference>
```

```
                  xxs234235s
      </command-reference>
</fax-status>
```

Fax-status-response document

The fax-status-response document provides the detailed information about what happened (or is happening) to a fax request on an XML-F service. The basic structure for the fax-status-response is as follows (this example is simplified):

```
fax-status-response
      request-results                (required)
      status (one of...)             (required)
            {short-status}
                  job-status         (required)
            {full-status}
                  job-status         (required)
                  attempt-status     (one or more)
                  recipient          (required)
                  date               (required)
                  csi                (zero or one)
                  result             (required)
            short-message            (required)
            long-message             (zero or one)
            service-reference        (required)
            application-reference    (zero or one)
            command-reference        (zero or one)
```

Fax-cancel document

The fax-cancel document is used by a sending application to cancel a previously submitted fax request. This is a sample fax cancel document:

```
<?xml version="1.0"?>
<!DOCTYPE fax-cancel SYSTEM "fax-cancel.dtd">
<fax-cancel>
      <account>
                  <id>
                              Filmore5455
                  </id>
```

```
                    <subid>
                                David Filmore
                    </subid>
                    <mail-address>
                                filmore@esker.com
                    </mail-address>
        </account>
        <service-reference>
                    1011
        </service-reference>
        <command-reference>
                    xxs234236s
        </command-reference>
</fax-cancel>
```

Appendix A – Formatters

VSI-FAX formatters are used to convert PostScript Level 1 and PCL5e (HP LaserJet 4) documents into Tagged Image File Format (TIFF) files, the format used by the fax server.

Note: While the VSI-FAX client programs make the formatting or imaging requests, the formatting is actually performed by the fax server.

VSI-FAX fax files are standard TIFF files with added tags that are used specifically by VSI-FAX. Most popular TIFF image viewers or application programs that import TIFF will ignore these additional tags and process such files normally.

Note: PostScript Levels 2 and 3 are not currently supported.

Automatic file conversion

The fax server supports several options for formatting input files submitted in a fax request. By default, the fax command `vfx` assumes that any input file is an ASCII text file and will process it accordingly.

If `vfx` recognizes the extension of an input file, it will treat it as that type of file. The file extensions recognized by `vfx` are:

txt	ASCII text.
ps	PostScript Level 1.
pcl	PCL5e (HP LaserJet 4/5).
tif	TIFF Group III and Group IV.
fax	VSI-FAX 2.1 fax format (must comply with VSI-FAX version 2.1 file formatting).

Note: The `vfx` command will accept either Group 3 or Group 4 TIFF files; however, they will always be imaged as a Group 3.

When a file has no recognized extension or when reading from stdin, the `vfx` command supports an option to specify the file type. You can do this by passing the -F option to the `vfx` command and then specifying either `ep`, `ps`, `pcl` or `tif`.

Note: For documents formatted with embedded Epson printer codes, the `-F ep` option must be used.

For example:

```
vfx -n 5551212 -F pcl <filename>
```

Alternatively, a user can specify a file type after a filename by appending a filetype. For example:

```
vfx -n 5551212 filename:pcl
```

- or -

```
vfx -n 555-1212 filename:ps
```

You can image a file without transmitting it by using the `vfx` command:

Note: You can image a file without transmitting it by using `vfx -o <output_file_name> <input_file_name>`. When the -o option is used, the file will not be faxed.

Resolution

Although most PostScript-generating applications are not dependent on the resolution of the output device, some of these applications will perform better if aware of the output resolution. Since fine fax resolution of 200 x 200 dpi is lower than the typical laser printer's resolution of 300 x 300 dpi or 600 x 600 dpi, some documents will look different when printed by different devices. If your application offers a choice of resolutions, select 200 x 200 dots per inch.

PCL5e (Enhanced) Fonts

The fax server supports full PCL5 (HP LaserJet III and LaserJet IIIsi) and PCL5e (HP LaserJet 4/5) features including:

Bitmaps

Orientation	Spacing	PtSize	Pitch	Style	Stroke Typeface
Portrait	Fixed	16.67	8.5	Upright	Medium Line-Printer (0)
Landscape	Fixed	16.67	8.5	Upright	Medium Line-Printer (0)

Symbol Sets

Roman-8 (8U)

PC-8 (10U)

PC-8-DN (11U)

US-ASCII 90U)

PC-850 (12U) and ECMA-94 (0N)

UK (1E, Swedish (0S), Italian (0I), Latin-2 (2N))

Latin-5 (5N)

Spanish-1 (2S)

German (1G)

French (1F)

Norwegian (0D)

Scaleable Typeface

Typeface	Stroke	Style	Typeface	Stroke	Style
Courier (4099)	Medium Medium Bold Bold	Regular Italic Regular Italic	CG-Times (4101)	Medium Medium Bold Bold	Regular Italic Regular Italic
Letter Gothic (4102)	Medium Medium Bold	Regular Italic Regular	Antique Olive (4168)	Medium Medium Bold	Regular Italic Regular
Univers (4148)	Medium Medium Bold Bold	Regular Italic Regular Italic	Univers Condensed (4148)	Medium Medium Bold Bold	Regular Italic Regular Italic
CG-Omega (4113)	Medium Medium Bold Bold	Regular Italic Regular Italic	Garamond (4197)	Medium Medium Bold Bold	Regular Italic Regular Italic
Albertus (4362)	Bold Extra Bold	Regular Regular	Coronet (4116)	Medium	Italic
Marigold (4297)	Medium	Regular	Clarindon Condensed (4140)	Bold	Regular
Symbol (16686)	Medium	Regular	Wingdings (31402)	Medium	Regular
Arial (16602)	Medium Medium Bold Bold	Regular Italic Regular Italic	Times New Roman (16901)	Medium Medium Bold Bold	Regular Italic Regular Italic
Prestige (4104)	Medium	Regular			

Note: Courier and Letter Gothic are the only mono-spaced (i.e., fixed-width) fonts available. Integrations that require compressed print may find the output more readable if the Letter Gothic font is used.

PostScript fonts

The fax server supports all Adobe Type 1 fonts, including those provided in a PostScript document. The following is a list of built-in fonts that are available:

AvantGarde Book AvantGarde Demi AvantGarde BookOblique AvantGarde Demi-Oblique	Proportional	Bookman Light Bookman Demi Bookman LightItalic Bookman DemiItalic	Proportional
Courier Courier Bold	Fixed-width	Courier Oblique Courier BoldOblique	Fixed-width
Helvetica	Proportional	Helvetica Bold Helvetica Oblique Helvetica Narrow Oblique Helvetica Narrow-BoldOblique Helvetica BoldOblique	Proportional
Helvetica Narrow	Proportional	Helvetica Narrow Bold	Proportional
NewCenturySchlbk Roman	Proportional	NewCenturySchlbk Bold NewCenturySchlbk Italic NewCenturySchlbk Bold Italic	Proportional
Palatino Roman Palatino Bold Palatino Italic Palatino BoldItalic	Proportional	Symbol	Proportional

Times Roman Times Bold Times Italic Times BoldItalic	Proportional	ZapfChancery MediumItalic	Proportional
ZapfDingbatsTimes Roman	Proportional		

External (user-defined) formatters

Users can now specify their own formatters to be included in the list of valid file types and formatters. This is done via the `formatters.lst` file.

Important: A formatter specified in the `formatters.lst` file will override an internal formatter.

Synopsis

An external formatter is expected to use the following syntax:

```
<program> [options] <filename>
```

Options

-E	`{std | fine}`	Resolution	Valid values are:
		`std`	Standard (204 x 98)
		`fine`	Fine (204 x 196) (default)
-l	`<length>`	Page `<length>`	Valid values are:
		`letter`	11 inches (default)
		`a4`	11.69 inches
		`legal`	14 inches
-o	`<file>`		Output `<file>`

-p	<pages>	Page range. Contiguous ranges can be defined using a dash (−); non-contiguous ranges can be defined using commas.
-U	<user>	User name to login as when sending this fax
-Z	<options>	File conversion options

Notes

The following special processing is done for missing options:

-U <user>	Ignored
-E <resolution>	Done by our TIFF conversion
-l <length>	Ignored
-p <pages>	Done by our TIFF conversion
-Z <options>	Ignored
-o output	Expect output on stdout

It is expected that the output file will be a TIFF file. However, it will internally converted to a VSI-compliant file (i.e., force compression type, add tags, etc.) if it is not already.

Appendix B – Ordering DID Service

To order DID Service in the United States:

- Determine what your DID requirements are and how many simultaneous calls you are going to support.
- How many phone numbers will you need to reserve? The minimum block of phone numbers offered by most major regional DID service providers is 20.
- How many simultaneous inbound calls do you want to support? This will determine the number of DID trunk lines you need to order. You have the option of picking a block of numbers that will be serviced by a specific number of DID trunk lines. These DID trunk lines will work in a rollover process whereby if someone dials one of the numbers in your block and the first trunk line is busy, it will roll over to the next trunk line and so on until it finds an idle trunk line. This is automatically supported by your DID service provider and does not require that you purchase any additional equipment.

Before you place your DID service order with your service provider, you need to know how to request the following options:

2-Wire DID interface

This specifies the physical connection from the DID service provider and your local terminating point.

DTMF signaling

This specifies the type of signaling that your local equipment is expecting. Choices are rotary, pulse and multi-frequency.

Wink start

This is a signal from the DID service provider to the DID interface unit that tells it a DID call is ready to be received.

Number of DTMF digits to outpoll

This specifies the number of DTMF digits that you want to receive prior to accepting the call and is used by the fax software to identify the number being called and resolve a name or department from the DID table. Although you can specify how many digits you want to receive, the maximum number is 7. The actual number will be based on your particular environment.

Contact your service provider and specify that you are ordering a DID trunk line.

If your current PBX phone switch does not have provisions for supporting DID service, you need to contact a DID interface equipment manufacturer to purchase an interface unit. DID trunk lines are dedicated lines from the service provider that require a special interface at the customer's site. The interface equipment is available in models that support from one to sixteen individual DID trunk lines. Some models also come with an out-dial transfer port that allows you to connect a standard dial line for outbound dialing using the same modem.

Appendix C – Roxbury fonts

VSI-FAX now provides a new mechanism for using and managing the Roxbury family of fonts. VSI-FAX provides the following Roxbury fonts:

- Roxbury pica (regular) 10 cpi
- Roxbury bold 10 cpi
- Roxbury italic 10 cpi
- Roxbury italic bold 10 cpi
- Roxbury compressed 16.7 cpi

These are fixed-width bit-mapped fonts that are designed specially to look good at either std or fine resolution. These fonts are used in the following places:

`eptotif` uses them to image text files.

`pcltotif` uses them for text mode conversion. In this mode, the Roxbury fonts are compiled into PCL soft-fonts, which can be selected with the appropriate PCL font-selection command.

`vtifftool` uses them in the header command to add a header to pages of a TIFF file.

FIMs use them to create the header at the top of sent fax pages. The Roxbury fonts, as we currently have them, are a mixture of character sets.

The low-order half (chars 0x20 through 0x7f) are the same as the standard ASCII character set. The top-half (chars 0x80 through 0xff),is a mixture of the PC line-drawing characters (chars 0xb0 through 0xdf) and various non-standard characters.

These non-standard characters are not the same as the standard PC character set or the standard ISO multi-lingual character set (ISO8859).

Esker provides these fonts as both the original text files describing these fonts and as compiled font files (`.fnt` files) usable by `eptotif` and the FIMs, as well as compiled PCL soft-fonts (`.sft` files). We also provide a font compiler program, which will compile the text font descriptions into new `.fnt` and `.sft` files.

These various fonts and source files allow you modify the Roxbury font to support special international symbols they need (e.g., Spanish cedilla, the German ess-tsett, etc.) and have these characters used commonly in all places where text-imaging is performed

The compiled Roxbury fonts, source files and font compiler are located in the `$VSIFAX/lib/fonts` directory:

fontcomp	Font compiler
roxypica.txt	Roxbury pica font description file
roxyital.txt	Roxbury italic font description file
roxycomp.txt	Roxbury compressed font description file
roxypica.fnt	Compiled Roxbury pica font
roxybold.fnt	Compiled Roxbury bold font
roxyital.fnt	Compiled Roxbury italic font
roxybdit.fnt	Compiled Roxbury italic bold font
roxycomp.fnt	Compiled Roxbury compressed font

▶▶ Refer to your *VSI-FAX Reference Addendum* for additional information about the font compiler.

The compiled PCL soft-fonts files are located in the `$VSIFAX/lib/fxpcl` directory:

roxypica.sft	Roxbury pica soft-font
roxybold.sft	Roxbury bold soft-font
roxyital.sft	Roxbury italic soft-font
roxybdit.sft	Roxbury italic bold soft-font
roxycomp.sft	Roxbury compressed soft-font

Note: the bold and italic bold fonts are generated from the corresponding non-bold font descriptions.

Compiling Roxbury fonts

Typically, you would modify the font files to contain the special you need, then enter the following commands:

```
cd $VSIFAX/lib/fonts
fontcomp -v -i roxypica
fontcomp -v -i roxyital
fontcomp -v -i roxycom
```

This compiles the various fonts and installs them into the proper directories.

The `eptotif` program automatically loads these fonts from the fonts directory, unless it is invoked with the `-Z noloadfonts` option, in which case it will use internal linked-in versions of these fonts.

When the `pcltotif` program is invoked with the `-e` option (which is done when a file-type of `.txt` is used), it will load the corresponding soft (`.sft`) font for the various font selections.

By default, all FIMs image the page header using an internal linked-in version of the roxybdit font (Roxbury italic bold). However, you can choose a different font for the page header by changing the `DEVICE:font-name=<font>` entry in the `vsisrv.ini` file.

Tip: If you choose the Roxbury compressed font for your page headers (i.e., by setting `vsisrv.ini DEVICE:font-name=roxycomp`), you will able to display up to 120 chars of user data in the header, as compared with 62 chars using other fonts.

Appendix D – Sample Unix and Linux Mount Commands

These CD-ROM mount commands are only examples. Your command arguments may be different depending on the file systems you have installed. In particular, if the `/cdrom` mount point does not exist, use `/mnt` in place of `/cdrom` in these examples. Consult your system administrator for the appropriate command to use for your installation.

Compaq

```
mount -r /dev/rz4c /cdrom
```

```
mount -r -t cdfs -o rrip /dev/rz4c /cdrom
```

HP

```
pfs_mount -o xlat=unix /dev/dsk/<device> /cdrom
```

IBM

```
mount -r -v cdrfs /dev/cd0 /cdrom
```

NCR

```
mount -F cdfs <cdrom-dev> /cdrom
```

SCO

```
mount -r /dev/cd0 /cdrom
```

```
mount -r -f hsfs /dev/cd0 /cdrom
```

```
mount -r HS /dev/cd0 /cdrom
```

Sun

```
mount -r hsfs /dev/sr0 /cdrom
```

Appendix E – Fax Server Information Form

See the “Annotated Fax Server Information Form” on page 33 for detailed information about filling out this form.

Licensing Information	
Information	**Entry**
Fax Server Serial Number	
Fax Server Activation Key	
Maintenance Activation Key	

Cover Page Information	
Information	**Entry**
Company Name	
Address 1	
Address 2	
Address 3	
Country	
Voice phone	
FAX phone	
Email	

Dialing Properties	
Information	**Entry**
Country Code	
Long Distance Access #	
Area Code	

Local Number Length	
Dial Prefix	
Dial Suffix	
Called Subscriber ID (CSI)	
Transmitting Station ID (TSI)	

Internet Email Servers

Information	Entry
SMTP Server Name	
SMTP From Name	
POP3 Server Name	
POP3 User Name	
POP3 Password	

Fax Device Properties

Information	Entry
Device Name	
Entry	
Serial Port	
Device Type	

Final Checks

Question	Entry
Have you stopped all existing processes running on serial ports that you will be connecting your fax devices to?	
Is port 2996 dedicated to VSI-FAX?	

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