

95 - Fax Server (Hylafax)

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Description

The fax server (hylafax) allow to set-up a central point through which all other Linux or Windows clients in the same intranet, can send and receive fax as well as viewing their current send/receive status.

Most of the files for fax service are located under the directory `/var/spool/fax`, including service configuration files, device configuration files, faxes that are to be sent and that have been received, log files, and the FIFO queue for the fax device. The file and directory permissions in this area are set purposefully, so don't try to close them off for privacy's sake -- especially the FIFO file and the outgoing directory, which has the sticky-bit set.

You can add any number of fax modems using the `faxaddmodem` command, as long as your system is configured with the appropriate number of serial ports.

The HylaFAX servers will re-read a modem config file (if needed) before each send and on any reset. This means you only need to explicitly restart a server if you change it before doing a receive. You can also avoid restarting it if you use `cu` or `tip` to talk to the modem since this will cause the server to wakeup and then reset itself when you exit from `cu` or `tip`.

TIFF/Class F is the format in which HylaFAX stores received facsimile. There is documentation on the `faxrcvd` script invoked by the fax server for each received facsimile. To print each received fax just modify this script according to your local needs. For example, you might use `fax2ps` (in the HylaFAX distribution) piped to `ghostscript` with the Laserjet driver.

```
/usr/local/bin/fax2ps $1 | gs -q -sDEVICE=ljet3 -dNOPAUSE -sOutputFile=- | lp
```

Another useful program to use when printing TIFF images is the `tiff2ps` program that is included in the TIFF software distribution.

Ports Used : 4559(new) 4557(old). Both are used.

If you are using the `/dev/modem` as device for the modem for the configuration then:

- Make sure the symbolic link `/dev/modem` points to the right serial port.
(eg. `/dev/modem ---> /dev/ttyS0`)
- Make sure that the produced modem configuration file (see. below) will have the name: `/var/spool/fax/etc/config.modem`

Installation and configuration

1. Install the package `hylafax` (SuSE: serie n package `hylafax`)
2. Make sure the modem is turned on and connected it to one of the serial ports:
(`COM1=/dev/ttyS0` , `COM2=/dev/ttyS1` etc)
3. If you don't know which serial port the modem is on use `minicom` or `cu` program to check it.

1. Minicom

Use `Ctrl-A O` to change the serial port setup.

Use `atz<Enter>` command to verify the presence of the modem.

It should answer with OK.

Use `Ctrl-A x` to exit `minicom`

2. cu

Use the command: `cu -l ttyS0` to connect to the serial port where modem is

Use the command: `at+fclock=?` to ask for the class of modem

Use the command: `~.` to disconnect from the modem

4. Run the program `faxsetup` as `root`.
 1. Ignore the warning message about the `/usr/sbin/egetty` for now.
 2. Answer the questions to the best. If the answer is unknown press `<Enter>`
 3. If the modem is not configured yet then `faxsetup` will offer to start the program `faxaddmodem...` say yes to that.
 1. Answer the questions or press enter if answer not known.
 2. The program will attempt to detect the modem on the serial port.
 3. Say `no` to the question of configuring another modem.
 4. Say `no` to the question of running the program `faxmodem` unless you want a 'Fax Send only server'.
5. Uncomment or create the following line in the `/etc/inittab`
`mo:35:respawn:/usr/lib/fax/faxgetty /dev/ttyS0`
6. Tell `init` to read its `/etc/inittab` configuraiton file to start the `faxgetty` properly
`kill -HUP 1`
7. Set-up the IPs of the clients that are allowed to use this fax server by entering them in the file `/var/spool/hylafax/etc/hosts.hfaxd` as follows:
localhost
127.0.0.1
192.168.100.60
192.168.100.200
etc.

8. Use sendfax (ASCII program)

eg.

```
sendfax -n -m -h faxserver.com:4557 -d 5551212 -d 743892 /etc/passwd
```

Sends the file `/etc/passwd` without cover page(-n) at high resolution(-m) to the `faxserver.com` (-h `faxserver`) using standard port 4557 (:4557) to the 2 destinations (-d xxxxxxxx) phone numbers.

or susefax (x-program) to send faxe on a linux client.

To send a fax from StarOffice:

1. Print document to a postscript file(xxxx.ps) at 72 dpi.
2. use susefax to send the same document (xxxx.ps)

9. Use WHFC or Cypheus to send fax on a Windows client. You can get,

1. Cypheus fax Client from:

http://www.urania.com/cypheus/frm_down_e.htm

2. Or WHFC Fax Client from:

ftp://ftp.transcom.de/pub/whfc/whfc-1.0.8_setup_en.exe (english)

ftp://ftp.transcom.de/pub/whfc/whfc-1.0.8_setup_de.exe (deutsch)

10. To setup the receiving faxes to be printed and to be sent as a PDF or PS or TIFF file as mail attachment tom michel create a script (chmod 755) called

`/var/spool/[hyla]fax/etc/FaxDispatch` which should have the following lines:

```
$FAX2PS $FILE | lp 2>/dev/null
```

```
SENDTO=michel@linuxint.com;(can also be a local user michel)
```

```
FILETYPE=pdf; (can also be tif or ps)
```

Substitute pdf or ps for tif as you desire.

Note that because TIFF and PDF are binary file types, metamail or some other UU- encoding program must be installed. On Debian distribution the `uuencode` program is part of the package `sharutils`. If you do not use metamail's `mimencode`, (probably not!) then include a line like:

```
MIMENCODE=bin/uuencode_it;
```

in your `FaxDispatch` file where `bin/uuencode_it` is an executable shell script of the form :

```
-----
#!/bin/sh
uuencode -m $1 $1 | grep -E -v "^begin|^====$" 2>/dev/null
-----
```

On debian most of the Hylafax files are located in `/var/spool/hylafax/`

Programs involved with Hylafax in SuSE Distribution:

hfaxd	Hylafax's main daemon process. <u>Should be started on the server</u> (SuSE)Link to the start/stop script for the Hylafax service daemon
rchylafax	Hylafax's main configuration program (script)
faxsetup	Hylafax's Modem/serial Port configuration program (script)
faxaddmodem	Hylafax's 'getty' program for Incoming/Outgoing faxes on ttySx
faxgetty	Hylafax's program for 'Outgoing faxes only' environment
faxmodem	Hylafax's queue scheduler program
faxq	Adds a fax job to the fax queue. Formats accepted are:
sendfax or faxsend	ASCII, troff, PS, PDF and Silicon Graphics image format.
sendpage	Submit a pager job for transmission
faxcover	Generates a Postscript cover page for an outgoing facsimile
mkcover	HylaFAX continuation cover page generation command
faxrcvd	HylaFAX notification script for received facsimile (eg.mail or print fax)
faxrm	Deletes a fax from the fax queue (aborts a fax transmit)
faxabort	Tells faxgetty to abort an incoming fax now
faxalter	Alters parameters of faxes already sent to the fax queue
faxanswer	Tells faxgetty to answer the phone now
faxstate	Sends the modem status (ready, buzy or down) to faxq.
faxstat	Displays Hylafax jobs status
faxqclean	Helper application that keeps the fax spool area clear
faxinfo	command that prints information about received facsimile
faxquit	command to force server to quit
faxconfig	dynamically change HylaFAX configuration parameters
xferfaxstats	summarize HylaFAX transmission accounting
notify	HylaFAX user notification script
pollrcvd	HylaFAX script for delivering facsimile received by polling
recvstats	summarize HylaFAX receive accounting information
faxrcvd	faxd command for handling newly received facsimile
mkcover	faxd command for generating continuation cover pages
pollrcvd	faxd command for delivering facsimile received by poll
ps2fax	faxd command for converting POSTSCRIPT to TIFF
pdf2fax	faxd command for converting PDF to TIFF
pcl2fax	faxd command for converting PCL to TIFF
tiff2fax	faxd command for converting TIFF to FAX
faxmail	HylaFAX mail-to-fax gateway application
choptest	HylaFAX page chopping test program
cqtest	HylaFAX copy quality checking test program
dialtest	HylaFAX dial string processing rules test program
faxadduser	adds a fax user to the permissions file
faxdeluser	deletes a fax user from the permissions file
faxwatch	monitors low-level HylaFAX server actions
probemodem	Script to test probe the modem
tagtest	HylaFAX tag line testing program
recvstats	summarizes HylaFAX receive accounting information
tiffcheck	check TIFF for HylaFAX conversion requirements
tsitest	HylaFAX TSI access control list checking program
typetest	Compatibility test script for fax input files
FaxDispatch	Dispatch fax to email depending on own MSN or extention (ISDN)

What is in /var/spool/fax subdirectories:

	etc/config	Hylafax main config file
	FIFO.ttySx	FIFO for communicating with a faxgetty process
or	FIFO.modem	FIFO for communicating with a faxgetty process
	etc/config.ttySx	'Serial/modem port' settings file
or	etc/config.modem	'Modem/serial port' settings file
	etc/config.sav	Backup of previous config file after using faxsetup
	etc/setup.modem	Modem support functions (eg. page headers generation)
	etc/setup.cache	server setup file created by faxsetup
	etc/hosts.hfaxd	hosts that may submit jobs for transmission
	etc/xferfaxlog	log of facsimile sent and received
	etc/hosts	Liste of hosts that are allowed to send fax jobs.
	etc/cid	caller id access control list
	etc/tsi	fax machine receive access control list
	docq/doc*	documents available for transmission
	info/*	data base of remote fax machine capabilities
	client/*	FIFO special files created by client processes
	config/*	prototype configuration files used by faxaddmodem
	log/*	session logging records
	recvq/fax*	received facsimile
	sendq/q*	descriptions of jobs queued for transmission
	doneq/q*	descriptions of jobs that are done
	status/*	server status information
	tmp/*	temporary files created when submitting a job
	archive/*	database of archived jobs

Hylafax installation/configuration

(By Rawn Shah)

<http://www.linuxworld.com/linuxworld/lw-1999-06/lw-06-hylafax.html>

The bounty of the Internet may be changing practically every type of business transaction, but for the moment faxing still rules the document-transmission arena. PDF aside, faxing is the easiest way to send just about any material, from freestyle handwritten notes to printed and illustrated data sheets. As a result, practically every business, large or small, has a fax machine.

You would think by now there would be an integrated end-to-end digital document-transmission solution to fully unite scan and print technology with e-mail. This isn't yet the case. Unfortunately, if you want to use a computer to send faxes, you must still work with the analog fax system, instead of around it. In such a scenario (called network faxing), you send off a document directly from your computer to a fax server. The fax server then collects the document, formats it, and dials out to a remote fax number for transmission. Fax servers can also receive documents, attaching incoming faxes to e-mail messages and directing them to appropriate mailboxes.

Linux users aren't without network faxing capability. There's at least one good freeware package -- HylaFAX -- that suits the needs of not just Linux users, but Mac, Windows and Unix users as well. Given both its complexity and its support for multiple platforms, HylaFAX is a veritable poster child for open source development. Not only does it run on more Unix platforms than many commercial products, but it also continues to improve, thanks to the many contributions from the open source community over the years. Here, we'll take a look at setting up HylaFAX, including ways to link this network-fax system to mail and Web servers.

How HylaFAX works

HylaFAX is a client/server system; the HylaFAX client generates a document that the server can transmit over the telephone. In short, the client -- which is available for Linux, Windows, Mac, and a number of different Unix systems -- converts the user's document into a PostScript file. It then contacts the fax server and sends the document, along with control information about where to send it. The fax server receives the document over the network and processes it to be delivered to any number of attached fax modems.

We tested HylaFAX version 4.0, patch level 1, on Red Hat 5.2 and 6.0, and the Windows HylaFAX (WH) client. (Of course, the Linux client can run either on the server or from a remote Linux machine.) The HylaFAX server includes three main components -- the `faxq` scheduler process, the `hfaxd` network server process, and the `faxgetty` incoming-fax terminal process, along with several support scripts. `faxq` and `hfaxd` are for setting up the system and sending outgoing faxes. `faxgetty` and `hfaxd` are required for receiving incoming faxes.

Here's how HylaFAX receives faxes:

When a fax comes in over the line, `faxgetty` picks up the connection, receives the document, places it in the incoming queue, and calls the `faxrcvd` script. `faxrcvd` determines how to either alert users that a fax has arrived or, if the document should be printed instead, determines how to print it. In addition, the `faxqclean` helper application keeps the fax spool area clear, and `faxcron` tracks log files and activity in the spool area. The WH client is implemented as a simple fax/print device recognized by Windows as a printer on the client machine. When you need to fax a document, you simply send a print job, through your application's print dialog, to the appropriate "fax printer." A follow-up dialog box then asks you where to send the document and what information to put on its cover. The client converts the document into the PostScript format understood by fax servers, contacts `hfaxd` running on your designated fax server, and sends the document along for `hfaxd` to

process.

HylaFAX's communication protocol is actually an extension of FTP. So, although the package adds additional commands particular to the faxing environment, its command set and communication methods will be familiar to anyone who uses that tried-and-tested protocol.

Putting it on

HylaFAX is available in both source code and binary packages (see Resources). We opted to download the server RPM (Red Hat package module) rather than compile a new one. We also downloaded the WH client for Windows 95 and Windows NT systems from the contrib directory. It's worth noting that HylaFAX is supported on practically every major Unix platform, including AIX, Solaris, IRIX, HP-UX, Compaq/Digital Unix/Ultrix, and SCO. And the HylaFAX site does have a tar file containing the binaries for Linux systems other than Red Hat; unfortunately, it lacks a good installation script.

At the download site, you'll find a list of all fax modems that have been tested with HylaFAX. Check it out before installing in order to confirm that you have a tested fax modem on your server. And remember, fax modems and data modems are not the same; for that matter, not all fax modems are equal. Many data modems do have fax capabilities, but check against the tested list in any case. Also, stay away from internal WinModems. This type of modem, which uses software drivers for analog-to-digital conversion, works only on Windows platforms. Double-check your modem's packaging to make sure it doesn't include the words WinModem or made for Windows. (For more information on WinWare, check out Rick Cook's Linux 101 column in the May issue of LinuxWorld.)

If your modem isn't on the tested list, but you want to use it anyway, try sending it the following test command using a terminal program like `kermit`, `minicom`, or `cu`: (responses from the modem are underlined)

```
# cu -l ttyl
Connected
at+fclass=?
0,1,2,2.0
OK
~.
Disconnected
#
```

The `fclass` command queries the modem to see which class of fax services it can support. Class 0 is for nonfax data communications. Classes 1, 2, and 2.0 are for fax services. HylaFAX works with any of the latter three. While class 1 fax modems are supported, it's recommended that you use the newer class 2 or class 2.0 modems. Although the different classes aren't supersets of each other, every class 2 modem does also support class 1 communications. For our testing, we used a Creative Labs Modem Blaster external modem supporting classes 1 and 2, connected to `COM1` or `/dev/ttyS0`. (Note that the Digicom DE-5620 is comparable to the Modem Blaster.) If you're unsure about how to connect your modem to the system, you may want to review the Linux Documentation Project's modem how-to document. (See Resources.)

Virtually all fax machines (i.e., group 3 fax machines) use the TIFF document format, so TIFF conversion capabilities must be installed on your server. TIFF support is normally a part of the Linux installation, but to make sure you've got it, check for `libtiff`, (`ls /usr/lib/libtiff.so*/usr/lib/libtiff.a`). If you need to, you can download the library from your Linux-release vendor. In addition, make sure you have the `ghostscript` installed on your system to perform conversion between PostScript and TIFF.

Setting it up

Once you've compiled and installed the software and connected your modem, you're ready to set up the fax service by running the command `/usr/sbin/faxsetup`. `faxsetup` checks that your installation went properly, verifying pathnames and file locations. It also verifies that `/etc/services` (the network-protocol service mapper) includes a protocol entry for HylaFAX. Furthermore, it sets up an e-mail alias for FaxMaster (the default recipient is root) and adds entries to `inetd.conf` so that the `hfaxd` server and `faxq` daemons are started on boot.

Most of the files for fax service are located under the directory `/var/spool/fax`, including service configuration files, device configuration files, faxes that are to be sent and that have been received, log files, and the FIFO queue for the fax device. The file and directory permissions in this area are set purposefully, so don't try to close them off for privacy's sake -- especially the FIFO file and the outgoing directory, which has the sticky-bit set.

If you use the `cron` daemon to run the `logrotate` tool to trim the log files generated by your Web, FTP or other servers, make sure that the entry in `/etc/logrotate.d/hylafax` points to the proper log file. By default, `logrotate` looks for the file `xferlog`, while HylaFAX uses the name `xferfaxlog` (in `/var/spool/fax/etc`). This small error caused unnecessary cron job failures and e-mail warnings during our own testing. Simply edit the filename entry in `/etc/logrotate.d/hylafax` to reflect the correct name (`xferfaxlog`).

Once the general fax system has been installed, you'll need to use the command `/usr/sbin/faxaddmodem` to add modem services. This interactive script collects information about your fax service, such as area code, fax number, header and page-numbering format, number of rings to wait for before answering, and which fax cover to use. The script is fairly straightforward, but if you want a detailed explanation of how it works and what it does, you can read the `setup` documentation on the HylaFAX site. Note that you can add any number of fax modems using the `faxaddmodem` command, as long as your system is configured with the appropriate number of serial ports.

If you plan to use your fax modem as a permanent incoming/outgoing fax service, you need to run the `faxgetty` process on the serial port. To have `faxgetty` launched and maintained through the system `init` process, you'll want to define an entry for it in `/etc/inittab`. Adding the following entry to `/etc/inittab` turns your specified serial/modem port into a permanent incoming/outgoing fax service:

```
# Run faxgetty on COM port 1 (serial port ttyS0)
t0:23:respawn:/usr/sbin/faxgetty ttyS0
```

Running `faxgetty` as `respawn` through `init` ensures that the process is always running, even if it is accidentally killed. Keep in mind that you won't be able to run other modem-based services such as PPP over the specified COM port if you use `respawn`, since the port will no longer be free for access. If you're unsure, either leave this line out of `inittab` or replace `respawn` with `once` to launch `faxgetty` only once after boot; then, if you kill the process, you can simply start it again when you need it with `/usr/sbin/faxgetty ttyS0`.

If you also want to have HylaFAX started by the `inet` daemon, add the following line to `/etc/inetd.conf`:

```
# Start HylaFAX Network Fax Server
```

```
hylafax stream tcp nowait fax /usr/sbin/hfaxd hfaxd -l
```

Finally, for rudimentary security, you should update the `/var/spool/fax/etc/hosts` file with either the IP addresses or hostnames of the client systems that will be allowed to access the fax server. This is, unfortunately, the only protection mechanism you have, since HylaFAX doesn't support proper password protection on a per-user basis. Also unfortunately, HylaFAX doesn't yet support individual user mailboxes. Routing is a general shortcoming of most fax systems today, and the International Telecommunications Union's standard for fax routing is still very new. HylaFAX, by default, simply prints out faxes to the destination server's default printer. You can, however, configure fax routing to users if the sender's fax number is well-known. In other words, if you receive faxes regularly from a particular fax number, you can route them to a specific location. This is explained more fully in the section below on advanced configuration.

Installing and configuring the Windows HylaFAX client

The Windows HylaFAX client is designed to work as a network fax client service for Windows 9x and NT systems, communicating with `hfaxd` on a fax server to send faxes as needed. (The download page for WH can be reached through the HylaFAX page; see Resources.) WH doesn't work with Windows 3.x clients at all, although an application called Winflex (also available through the HylaFAX site) supports the older Windows platform. Before you begin your installation, make sure that you have Windows Sockets version 2 (Winsock2) installed on your machine. If you have Windows 98 or Windows NT, you're already set, but Windows 95 users will need to download an upgrade patch from Microsoft. If you try to install WH without it, your system will simply barf and indicate that you need Winsock2 first. Winsock2 is fully backwards compatible with Winsock1.1 (the existing version on most Windows 95 systems), so you needn't worry that it will drastically affect your other network applications.

After installing WH, your next step is to configure a new printer device. From Explorer, click on the Printers folder and choose the "Add a New Printer" wizard. Choose "Local Printer," and type "Apple LaserWriter" as your printer (even though it really isn't). This selects an appropriate PostScript-capable printer device. In the Ports dialog box, select the WHFCFAX: port and click "Configure Port." Then specify the local spool directory for fax documents. The default, `\Windows\Temp`, is fine for most, although you can create a subdirectory `\Windows\Temp\FaxSpool` if you want to separate your spooled documents from the other files in the system temporary directory. Click "Open" for the default spool file listed as `def.spl`. Your new fax printer device is now ready to go.

Next, you'll tell WH where your fax server is located and which Linux user account to use to log on to the fax service. Start the WH application and get to the system settings dialog box via the Fax menu. All you should need to do now is add in the fax-server host name; everything else there should be correct. Move onto the User Settings dialog box and enter the requested user, company, and document-format information. The entry for "Login" should be your user name on the Linux fax server and "E-mail" should point to your e-mail address if you wish to receive notification whenever a fax has been scheduled for delivery at the server.

You may notice that, once again, the fax service doesn't seem to be password-protected. Unfortunately, this is a shortcoming of HylaFAX that still needs to be addressed. As mentioned earlier, only the client hostname listing on the server (in `/var/spool/fax/etc/hosts`) limits access to the fax services. The name you supply under the "Login" entry does not. In fact, your login entry can be anything, even a closed account; it is only used in logs to show who's sent or accessed a document.

You should now be set up to send faxes from your Windows machine. When you wish to send a document via network fax, just specify in the Print dialog the fax printer that you set up earlier. A dialog box will prompt you for recipient information each time you "faxprint."

WH includes a phonebook system for maintaining name and fax number information. The phonebook can work either from text files (called PHB files) or through a Windows ODBC database link to Excel, Access, SQL Server, Fox Pro, Filemaker or any ODBC-compliant database system on your Windows machine. To define a phonebook, specify a name and format (PHB or an ODBC link) in "Define Phonebooks" under the Fax menu. After that, you can add or delete recipient names using "Open the Phonebook" (also under the Fax menu). Each entry is saved to its appropriate phonebook database; you make reference to it for future outgoing faxes by simply referring to the name of the intended recipient.

Using fax services from Linux

Under Linux, the HylaFAX fax service (which by default accepts any text or PostScript file) is available to all users on the fax server.

To send a fax, simply execute the command `sendfax`, directing your file to the appropriate phone number. For example:

```
sendfax -d 5551234 myfile.txt sendfax -d 14155559182 document.ps
```

If you're on a different Linux system on the network, you need to have `sendfax` installed in `/usr/bin`. Then, define your server with the environment variable `FAXSERVER` or type either of the following full commands on the command line:

```
sendfax -h faxserver -d 5551234 myfile
sendfax -h ttyS0@faxserver:4559 -d 5551234 myfile
```

The first command simply directs the target file to the hostname `faxserver` (where HylaFAX should be running).

The second command gets more specific, indicating not only the hostname, but also which modem to use and on which port HylaFAX is running (the default port is 4559).

You can also schedule the fax to be delivered at a certain time as follows:

```
sendfax -a "now + 45 minutes" -d 5551203 newfile
sendfax -a "1999.06.08:10:00" -d 5551239 happybirthday.txt
```

The program uses the same format as `at`, and in truth simply schedules `sendfax` to be executed by `cron`.

The first example above indicates that the fax should be sent 45 minutes from command execution. The second indicates that the fax should send out a birthday wish on June 8, 1999, at 10 a.m. Check out the man page on `sendfax` for more information on sending documents by fax.

HylaFAX is preconfigured to e-mail `sendfax` users when their fax has been sent out, providing a report on whether the fax succeeded, how long it took, and other session particulars. If you decide to cancel a fax job, first check which jobs are queued, using `faxstat`, and then delete your job with `faxrm [job id]`.

Advanced configuration

HylaFAX supports special configuration options to control use of the fax server. Some of the more common advanced configurations are discussed here.

Routing by number

To set up fax routing according to the fax sender's number, you can create a file called `/var/spool/fax/etc/FaxDispatch` and add in the following lines:

```
-----
#!/bin/sh
case "$SENDER" in
*1*415*555*1212*)
    SENDTO=johndoe@home.domain
    ;;
# send all faxes from SF office to John
*1*212*555*8649*)
    SENDTO=office
    ;;
# send all faxes from NY office to the general office staff
*1*520*555*1938*)
    $TIFFBIN/fax2ps $FILE | lpr -P bob
    # print out any faxes from Tucson
    # office on network printer 'bob'
    ;;
*)
    SENDTO=FaxMaster
    ;;
esac
-----
```

Limiting service

To help reduce phone costs, you can set limits on the hours during which users can send outbound faxes. Add the configuration parameter `TimeOfDay` to `/usr/share/hfaxd.conf` to specify these limits, which can be presented in multiple formats. The most basic format is a 24-hour clock representation showing start and end times:

```
# Receive any faxes between 8am and 6pm on any day TimeOfDay:
"0800-1800"
# Receive any faxes between noon and 3pm on weekdays and 8am and
midnight on Saturdays TimeOfDay:
"Wk1200-1500,Sat0800-0000"
```

What's more, you can define specific allowable time limits for given numbers or area codes. If you expect that a lot of fax traffic will be going to a certain area code (including international codes), you can define a set of rules governing when users can send outgoing faxes to that destination. First edit the file `/var/spool/fax/etc/config`, adding the line `DestControls: etc/destinations`

Then create a new file called `/var/spool/fax/etc/destinations` and add lines such as the following:

```
^[+]911$ RejectNotice = "You cannot place fax calls to 911"
^[+]011.* TimeOfDay = "1400-2300"
^[+]1415.* TimeOfDay = "1000-1800" .*
TimeOfDay = "Any"
```

The syntax is exactly like that of the default `TimeOfDay` parameter, except that it also includes a regular expression matching the fax-number sequence.

(The system uses regular expressions to match numbers; for more information on this, see the man page on `grep`).

The first entry above rejects any calls on the specified number (in this case, 911). The second limits international faxes, (denoted in the US by the 011 international direct dial prefix), to times between 2 p.m. and 11 p.m., local time. The third entry limits calls to the 415 area code (San Francisco) to between 10 a.m. and 6 p.m. local time. Finally, the last example indicates that all other calls may be sent at any time of the day.

Distinctive ringing

HylaFAX can also use distinctive ringing, a special service provided by most phone companies that maps multiple phone numbers to the same phone line. With distinctive ringing set up, multiple telephone devices ring with different tones, distinguishing which line is ringing, and thus allowing devices such as faxes or modems to know when to pick up and when to ignore.

Especially helpful for small home offices, distinctive ringing saves on costs, since you pay only for one phone line and a small additional cost for the service. Check your modem's manual to see if it supports distinctive ringing. Settings are as follows:

```
RingVoice:      RING1 RingFax:   RING2 RingData: RING3
```

Adaptive answer

An alternative to distinctive ringing is the adaptive answer system available on some modems. Enabled modems pick up the line and listen for tones to determine if incoming calls are intended for fax or data services. Adaptive answer isn't 100 percent effective and may take a few seconds to pick up correctly. It doesn't require any special service to be provided by the phone company, but it does assume that either a fax or data line will be connected to the modem.

Here's how to enable it:

```
ModemSetupAACmd:      AT+FAA=1          # Setup modem for adaptive answer
AdaptiveAnswer:       yes              # use adaptive answer with faxgetty
AnswerRotary:         "fax data"       # try for fax first, then data calls
ModemAnswerCmd:       AT+FCLASS=1;A    # answer first as a fax service
ModemAnswerDataCmd:  ATH+FCLASS=0;A   # hang up then answer as data
Class1RecvIdentTimer: 5000            # time fax if no answer in 5 seconds
```

Also check out the advanced configuration documentation and FAQ at the HylaFAX Web site.

Fax to mail and Web gateways

You can set up e-mail aliases to send any incoming e-mail directly to a fax number by adding a simple entry to the `/etc/aliases` file, recreating the alias database, and restarting the `sendmail` daemon. For example:

```
# Fax any e-mail to the Life Sciences building on Campus faxoflife:
"|/usr/sbin/sendfax -d 5551212"
```

```
# Strip out spam mail with procmail before sending any faxes (make sure procmail is
properly installed) my homefax:
"|procmail |/usr/sbin/sendfax -d 5551234"
```

You'll have to recreate the mail alias database with the `newaliases` command and then restart the `sendmail` daemon i.e., kill the existing `sendmail` process, then restart it with:

```
/usr/sbin/sendmail -q1h -bd
```

Now you're just a step away from creating Web forms that perform any processing you like before sending input data to a fax machine. Just create a CGI script invoking the mail program to send information directly to a predefined e-mail/fax alias. The Web client sends data to the Web server, which sends it to the mail server, which in turn sends it to the fax server, which finally sends it off to a fax machine somewhere. It's a little roundabout, but it works very well. You could bypass the mail-to-fax-server step by directly calling the `sendfax` program in your script, but using the mail server helps create a phonebook entry that'll save you the trouble of managing fax numbers and other information. You could use an alternate means, such as an LDAP directory server, to store your client fax numbers. Using a script

created with a module such as PerLDAP, you could retrieve your data through the LDAP directory server rather than the more primitive e-mail alias system.

Network faxing plus

HylaFAX's client/server-based protocol allows you to set up remote fax services. Essentially, you can set up a fax server in, say, San Jose, and access it from clients in Tucson, Tacoma, or Tallahassee to send out local faxes within Silicon Valley. That uses the Internet to do most of the delivery, placing local calls only within the San Jose area, and thus (probably) reducing your overall cost of faxing. This becomes a real money-saver, particularly for international faxing, if you pay a flat-rate for your Internet service.

HylaFAX also supports **paging protocols**, allowing users to send alphanumeric messages to pagers, using the common IXO pager protocol. Such an e-mail-to-pager gateway is, like the e-mail-to-fax gateway we've discussed, relatively easy to set up. If you're interested, you should definitely read through the HylaFAX documentation.

About the author

Rawn Shah is an independent consultant in Tucson, AZ. He has worked with and written on multiplatform issues for years and is constantly surprised at how few people know about useful system tools. He can be reached at rawn.shah@linuxworld.com.

Resources

HylaFAX -- available in both source code and binary packages:
<ftp://ftp.HylaFAX.org/pub/hylafax>

The Linux Documentation Project's modem how-to page:
<http://metalab.unc.edu/mdw/linux.html>

The main site for HylaFAX -- from here you can follow links to download the server software, along with setup instructions:
<http://www.HylaFAX.org/>

The Frequently Asked Questions list for HylaFAX:
<http://www.HylaFAX.org/HylaFAQ/index.html>

Modems tested with HylaFAX:
<http://www.HylaFAX.org/modems.html>

Links to all the various clients created for HylaFAX:
<http://www.HylaFAX.org/links.html>

The IETF's Internet Fax Working Group:
<http://www.imc.org/ietf-fax/>

Network Working Group, "RFC 2542: Terminology and Goals for Internet Fax" (IETF, April 1999):

<http://www.imc.org/rfc2542>

Network Working Group, "RFC 2301: File Format for Internet Fax," (IETF, March 1998):

<http://www.imc.org/rfc2301>

Network Working Group, "RFC 2303: Minimal PSTN address format in Internet Mail," (IETF, March 1998):

<http://www.imc.org/rfc2303>

Network Working Group, "RFC 2304: Minimal FAX address format in Internet Mail," (IETF, March 1998):

<http://www.imc.org/rfc2304>

Server als Fax/SQL-Server im Intranet mit SUSE 8.1

Hardware: PII350 128MB RAM

ISA:

Fritz Card A1=Classic
 IRQ=5
 io=0200

PCI:

eth0- Alien telesynt AT-2500 10/100

Bios IRQ 5 reserviert für ISA Karten (Fritz)

Installation Suse8.1

Standart System ohne Büroanwendungen

```
gcc
make
*dialog
*compat
```

```
hylafax
capi4hylafax
avmfritzcapi
*unixODBC
```

```
xdelta
```

0. Einrichten der Netzwerkkarten

1. Einrichten der ISDN Karte

>Treiber von HISAX auf AVM CAPI2 für FAX G3 ändern

- ISDN Konfigurieren

```
vi /etc/modules.conf
```

Ändern der Einträge: Setzen Sie statt "off" den Parameter "capidrv" ein

```
alias char-major -43 capidrv
                  -44 capidrv
                  -45 capidrv
```

2. **you** - Yast Online Update (Probleme mit MySQL+ glibc) - Aktualisierung der Installierten Pakete

3. **Wichtig bei 8.1**

```
capi4linux-2002.11.5-0.i586.rpm
i4l-base-2002.11.5-0.i586.rpm
i4l-isdnlog-2002.11.5-0.i586.rpm
i4l-vbox-2002.11.5-0.i586.rpm
i4lfirm-2002.11.5-0.i586.rpm
```

Removed Official update is now available via YOU or at <ftp://ftp.suse.com/pub/suse/i386/update/8.1/rpm/i586/>

```
#####
```

```
fcmmod-k_athlon.tgz fcmmod-k_deflt.tgz Removed: use i4l-kupdate
```

```
#####
```

```
i4l-kupdate-2002.11.6-0.i586.rpm
```

This archives contain fixed AVM CAPI driver modules for the original SuSE 8.1 kernel.

The orgiginal versions from 8.1 crash with analog modulations like FAX.

It also contains the missing fcpmcia_cs module for the FritzCard!PCMCIA.

It has also a fixed isdn.o for a problem with syncppp dial on demand.

It is only useful for the original SuSE Linux 8.1 kernel versions:

```
k_deflt-2.4.19-74
```

```
k_athlon-2.4.19-66
k_smp-2.4.19-68 (only isdn.o update no AVM CAPI driver for SMP)
To install do as root:
rpm -ivh i4l-kupdate-2002.11.5-0.i586.rpm
Then run the script: /usr/share/doc/packages/i4l-kupdate/kernel_update.sh
#####
```

Quelle: <http://www.suse.de/~kkeil/fixes\8.1\>

>>>>> Neustart >>>>> Neustart >>>>> Neustart >>>>>>> Neustart >>>>

4. Faxsetup

```
faxsetup Ausführen
Country Code=49
Area Code=3542
Long Distnce Dialing Prefix =0
International dialing prefix =00
<Enter>
527
527
7x <Enter>
Max Number of pages to permit ...= 30
3x <Enter>
run faxaddmodem =no
```

5. capi4hylafax

```
cd capi4hylafax
./install -c >>>Ändert capi rechte auf 666
/var/spool/fax/etc/config.faxCAPI anpassen !!!
logfilemode 664
rcvfilemode 664
```

6. Berechtigungen überprüfen:

```
# /dev/capi20 660 root uucp
# /var/spool/fax/etc/config.faxCAPI 660 uucp uucp
```

>>>>> Neustart >>>>> Neustart >>>>>>> Neustart >>>>>>> Neustart >>>>

7. Hylafax Starten

```
rchylafax start
#in /etc/inittab
fr:35:respawn:/usr/bin/c2faxrecv -q "/var/spool/fax"

sendfax -d nummer /faxtest.tiff
```

8. Hosts und User für Faxversand/empfang Konfigurieren

```
/var/spool/fax/etc/hosts.hfaxd
faxadduser -a adminpasswd -f hostDatei -u userid -p userpasswd -u UID username
eg.faxadduser -a adminpasswd -f hosts.hfaxd -p passwd -u 600 user1
```


Auszug der `hosts.hfaxd`

```
^user1@.*\.linux\.local\.de$:600:LdgkEFelD4vA.:DCFT7xVMz/2U.
user1@*.linux.local.de:UID:ADMINPASS:USERPASS
```

Hylafax automatisch starten!

```
cd /init.d/rc3.d und /rc5.d
ln -s ../hylafax S10hylafax           Starten
ln -s ../hylafax K10hylafax         Stoppen
```

9. Cypheus (Hylafax Windows Client mit SQL Anbindung)

10. Mysql für Cypheus Konfigurieren

```
rcmysql start
```

11. Test Datenbank löschen

```
mysqladmin -u root -p drop test
```

12. Cypheus MYSQL Datenbank importieren

```
mysql -u root -p < cypheus.mysql
```

aus Programme/Cypheus/Mysql/*cypheus.mysql*

13. root Password vergeben

```
mysqladmin -u root password geheim
```

14. Fax-Benutzer als SQL-Benutzer mit Rechten Anlegen

```
mysql -u root -p
grant insert, select, update, delete, reload on Cypheus.* to
cypheus@"192.168.2.%" identified by "geheim";
flush privileges;
```

15. Datenbank einrichten

Im Cypheus Programmordner (\) ist ein Script zum einfachen Einrichten der Datenbank vorhanden. Bevor Sie dieses verwenden können, müssen Sie es noch anpassen. Bitte setzen Sie in die letzte Zeile

```
GRANT SELECT,INSERT,UPDATE,DELETE
```

```
ON Cypheus.*
```

```
TO CypheusUser@"192.168.1.%" IDENTIFIED BY 'cypheus'
```

einen Standardbenutzer (*CypheusUser*), die IP-Range Ihres Netzwerkes

("192.168.1.%") und ein Passwort ('cypheus') ein. Diesen Benutzer verwenden Sie in den Cypheus Einstellungen -> [Fax Info Center](#)

Anschließend kopieren Sie die Datei auf den Server und starten

```
mysql -u root [-p 'passwort'] < /'path/to/cypheus.mysql'/cypheus.
```

Überprüfen Sie, ob die Datenbank 'Cypheus' mit den Tabellen

```
Call_by_Call
CbC_Ex
Cover_Page
Cypheus_Overlay
Cypheus_System
Cypheus_User
Fax_Address
Fax_Address_Long
Fax_Group
Fax_Group_Member
Fax_In
Fax_In_Forward
Fax_Merge
Fax_Out
Fax_Report
Fax_Rules_In
Fax_Taginfo
Fax_Tagline
```

Fax_User

korrekt angelegt wurde. **Wichtig!**

Sie können die Rechte noch individuell festlegen, bitte beachten Sie jedoch, dass alle Cypheus Benutzer auf die Datenbank lesend und schreibend zugreifen müssen.

Vergessen Sie bitte auch nicht, in den Cypheus Einstellungen die MySQL-Verbindung zu aktivieren.