Creating a fax pseudo-printer

Faxless Office

Although everyone you ask has a fax machine, modern Linux users are typically interested in moving closer to the paperless office. As is so often the case, the Internet can provide the answers, although they have very little to do with email.

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Bela-Andreas Bargel is currently reading education and computer science at the University of Magdeburg, Germany. Bela is the initiator and co-developer of the Webfax system introduced in this article. The project was supported by KDEPrint developer, Michael Goffioul [9], to whom Bela would like to say "Merci beaucoup!" for the good work.

We are all familiar with this daily routine: compose a letter, tidy up the layout in Open Office, print, walk over to the fax machine, then walk back to your desk because you forgot the number, and then walk back to the fax machine again, enter the number, and feed the paper into the machine.

Users who want to avoid the so-called media break, and at the same time save paper and fax maintenance costs, typically install a fax modem card in their PCs. But installing an analog modem parallel to your DSL connection is not a particularly modern approach. And let's not forget that you need to keep your computer powered up 24x7 to avoid missing out on incoming fax messages. Road warriors with laptops will typically reject this solution flat out as impracticable.

Figure 1: Webfax system architecture.

Special Internet gateways provide an elegant solution to this dilemma. Web providers like Germany's Strato [1] and 1&1 [2] offer their customers fax gateways. Other providers offer similar services[3][4][5]. Customers can simply mail their fax messages to the provider's server, and let the provider take care of the analog telephony side of the transmission.

These fax gateways also work the other way round, accepting fax messages from POTS networks. Each user is assigned a fax number. The gateway converts incoming fax messages to image files and mails them to the appropriate recipient. All of this costs just a few cents, and some providers even allow users a number of free messages per month.

Easy Faxing

Although it is quite simple to use a mail client to transmit ASCII-only files for forwarding by the fax gateway, ASCII text is hardly state of the art, and the layout is unlikely to impress your business partners. Instead, the idea is to be able to use any application, for example OpenOffice, to transmit fax messages with more com-
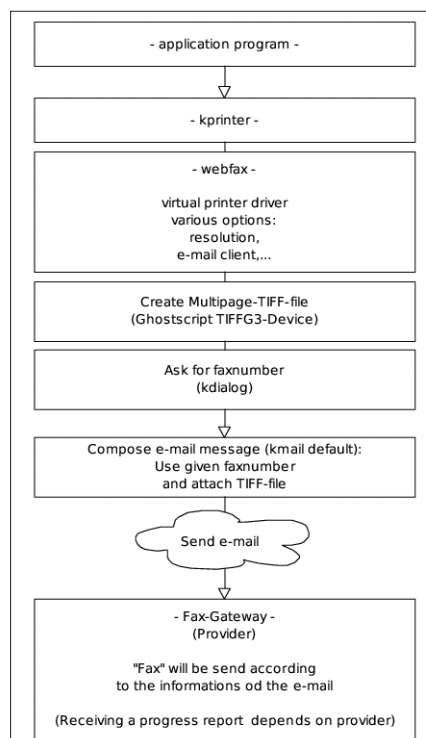
plex layouts. Gateways will typically accept fax-compatible TIFF files (**Multi-page G3 TIFF**) as mail attachments, but of course the client PC needs to be able to create this format. Some gateways may be able to handle other formats, for example some may understand PDF files, but TIFF is the smallest common denominator.

The Webfax function shown in Figure 1 is quite universal and easily modified. It uses Ghostscript to create TIFF files, which are then (semi-) automatically mailed to the fax service provider. To add more convenience, we have integrated a KDE print based pseudo-printer. This allows any application that can print via kprinter to output fax messages. If you are having trouble understanding what a pseudo-printer is, think of it as a feature similar to *Export to file* or *Export as PDF*.

Ghostscript at Heart

The core element in our script is a call to Ghostscript:

```
gs -q -dNOPAUSE -dSAFER ⏎
```

```
-dPARANOIDSAFER -dBATCH ⏎
-sstdout=%stderr -sDEVICE=⏎
tiffg3 -sPAPERSIZE=$PAGE_SIZE ⏎
-r$RESOLUTION -sOutputFile=⏎
$TIFF_FILENAME $PS_FILE
```

The TIFF file generated by Ghostscript is then passed to the email client. While this is going on, kdialog [6] asks for the fax number, as shown in Figure 2. You will need to decide on an email client. Also, most people are interested in a method of archiving faxed documents and the accompanying transmission data. As our solution uses kprinter, we decided to use another KDE program, kmail, as our email client, although you can use any client that allows you to enter a command to transmit a message to a specific address and add an attachment.

The script calls Kmail as follows:

```
kmail -caption FAX --composer ⏎
--subject webfax --attach file:⏎
$TIFF_FILENAME "$FAX_NUMBER@⏎
$FAX_SERVER"
```

This opens a "ready-to-run" email window, where the address is already entered, and with the converted TIFF file as an attachment. The mutt email client, which we also configured just to give you another example, forwards the message without waiting for the user. The shell script will also support command-line based clients such as *pine* or *mail*.

In all of these cases, you need to configure your email account on the gateway servers in your email client. The gateway server is just like any normal email server except that it also supports fax services. As you would with any other email account, you need to set up the target mail address, including the settings for POP3 and SMTP, but you also
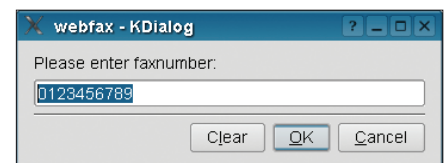

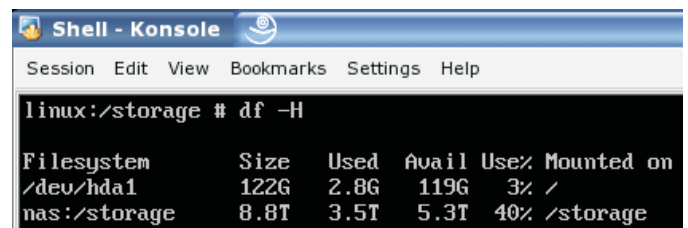**Figure 2: kdialog prompting the user to enter the fax number to dial.**

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need to set up the telephone number for the fax recipient. Mail addresses typically have a structure like the one shown in the following example:

```
Fax_number_with_area_code_
without_special_characters
@fax.provider_name.TLD
```

The data for some providers may look slightly different, but they follow the same principle. The Evolution email client in the current version does not support command line attachments and is not suitable for our approach (see Evolution Bugzilla entry [7]).

KDE-Embedded

The *webfax.xml* file takes care of adding fax functionality to kprinter. You can manually edit the XML file or use the printer manager to click your way through the changes. The file is the link between the command line parameters in the shell script, *webfax [-l] [-n number] [-c] [-p pagesize] [-h server] [-m kmail,mutt,pine,mail]* file.*ps* and its graphical rendering in the printer settings.

Parameters such as the resolution or the email client can be modified using the Webfax pseudo-printer settings for a print job within kprinter. This added abstraction layer means that users never get to see the shell script, but carry on working in a familiar GUI-based environment.

Howto: Using the Pseudo Printer for Webfaxing

To send a fax, users simply open the kprinter dialog in any application that can print, then select the new virtual fax printer, and print the document in the normal way. The print job running in the background calls Ghostscript to convert the document to a **Multi-page G3 TIFF** file and passes the file as an attachment to the email client.

Figure 4 shows kmail with the option of displaying the TIFF file before forwarding it to the fax gateway. This option allows you to check the quality. Smaller fonts are
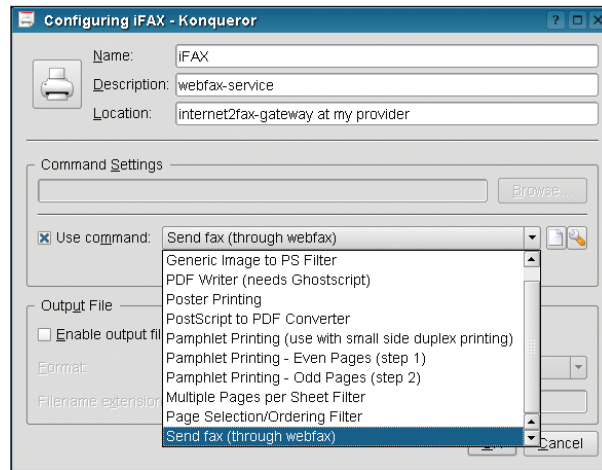

Figure 3: To install the printer, add a special printer and select *Send fax (webfax)*.

hard to read in low definition fax resolution, but at least you have the opportunity to check your documents before you send them. Check if the fax number is entered as part of the gateway email address; if so, there is nothing to stop you from sending your message.

Feedback from the gateway lets you know if your fax message has reached its target – that is, if a fax machine answered the call at the number you specified. The traditional approach is to send a status message to your personal mail account. This approach allows the mail client to collect the fax messages you have sent, and the receipt messages – and it takes the headaches out of archiving.

Future

The Webfax version we looked at in this article is the first official release. In the coming weeks, the developers will be col-
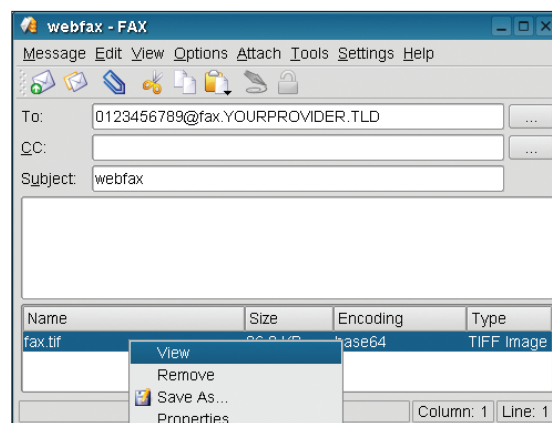

Figure 4: The converted print job ready to be sent as an email message.

lecting and evaluating the experiences, suggestions, and enhancements provided by users, to integrate a list of popular fax gateways in the tool's printer configuration. The project is also planning to produce an internationalized version, which will be published on the KDEPrint website by lead developer Michael Goffioul.

Work is already in progress on improved integration with other email clients. There are plans to use **DCOP** to integrate the Aethera client by The Kompany.com. Of course, you could use *dcop kmail current_ID send 1* to tell kmail to automatically relay messages, as described at [8].

If enough users are interested, the developers could possibly integrate kaddressbook as the fax number directory or implement a feature that would let the user assign multiple numbers to a single message to support mass fax messaging. The project actively encourages more support from the Open Source community If you are interested in helping with the effort to build Open Source tools for Internet fax, you can contact the author at *brainguardian-kde@yahoo.de*. ∎

INFO

[1] Strato Web Messaging: *http://strato.de/premium/index_ webmessaging_preise.html* (in German)

[2] 1&1 Webhosting: *http://hosting.1und1.de* (in German)

[3] eFAX: *http://www.efax.com*

[4] Fax2Mail: *http:www.fax2mail.com*

[5] Faxaway: *http://www.faxaway.com*

[6] Shell scripting with KDE dialog: *http://developer.kde.org/documentation/ tutorials/kdialog/t1.html*

[7] Request for a command line option for attachments in Evolution: *http://bugzilla. ximian.com/show_bug.cgi?id=28765*

[8] Kmail with DCOP: *http://www.volny.cz/bwian/dcop.html*

[9] KDEPrint: *http://printing.kde.org*

[10] Internet Fax Working Group: *http://www.imc.org/ietf-fax/index.html*