PRODUCT SURVEY:

# Internet Faxing DEMYSTIFIED

## You may be able to save a bundle by routing your faxes over the Internet.

BY FRANCOIS-ERIC DE REPENTIGNY

OF ALL THE FORMS OF COMMUNICATION INSPIRED BY the Internet, faxing over the Internet is probably the least common and most misunderstood. Ironically, Internet faxing makes a great deal of business sense. If you spend even moderately on long-distance faxing, you can start saving now by rerouting these transmissions over the Internet. Some vendors claim this will knock up to 80 percent off your fax bills.

Since the early 1980s, businesses in all industries have relied heavily on faxing. Even with the availability of e-mail carrying images and file attachments, corporate America has a powerful addiction to their fax machines that is unlikely to abate any time soon. A 1996 Gallup/Pitney Bowes survey found that Fortune 500 companies spend $15 million, or 41 percent, of their average annual $37 million phone bill on faxing. And about $11 million of that $15 million is spent on long-distance faxing.

What most people don't realize is that the text and images they're beaming over the phone network can just as easily be transmitted as 0's and 1's over the Internet, and often for a lot less money. Think of it like this: Every time you send a fax, you pay for a phone call. If the fax is going from New York to London, you pay for a long-distance call. If you're making the call during regular business hours, you may have to pay a premium rate. If you're a large company sending hundreds of faxes each business day, the charges add up quickly.

Imagine instead that you send that same fax by making a local call to the Internet where your fax is converted into a digital signal. That signal travels the Internet to London where it's converted back into a phone signal and delivered via another local call to its destination. Your tab for an overseas fax comprises only the local call at each end. To give a couple of price points, one Internet faxing service, Link Relay Communications, sends faxes from the U.S. to China for 49 cents a minute. By contrast, MCI charges at least $1.20 a minute for a U.S.-China phone call.

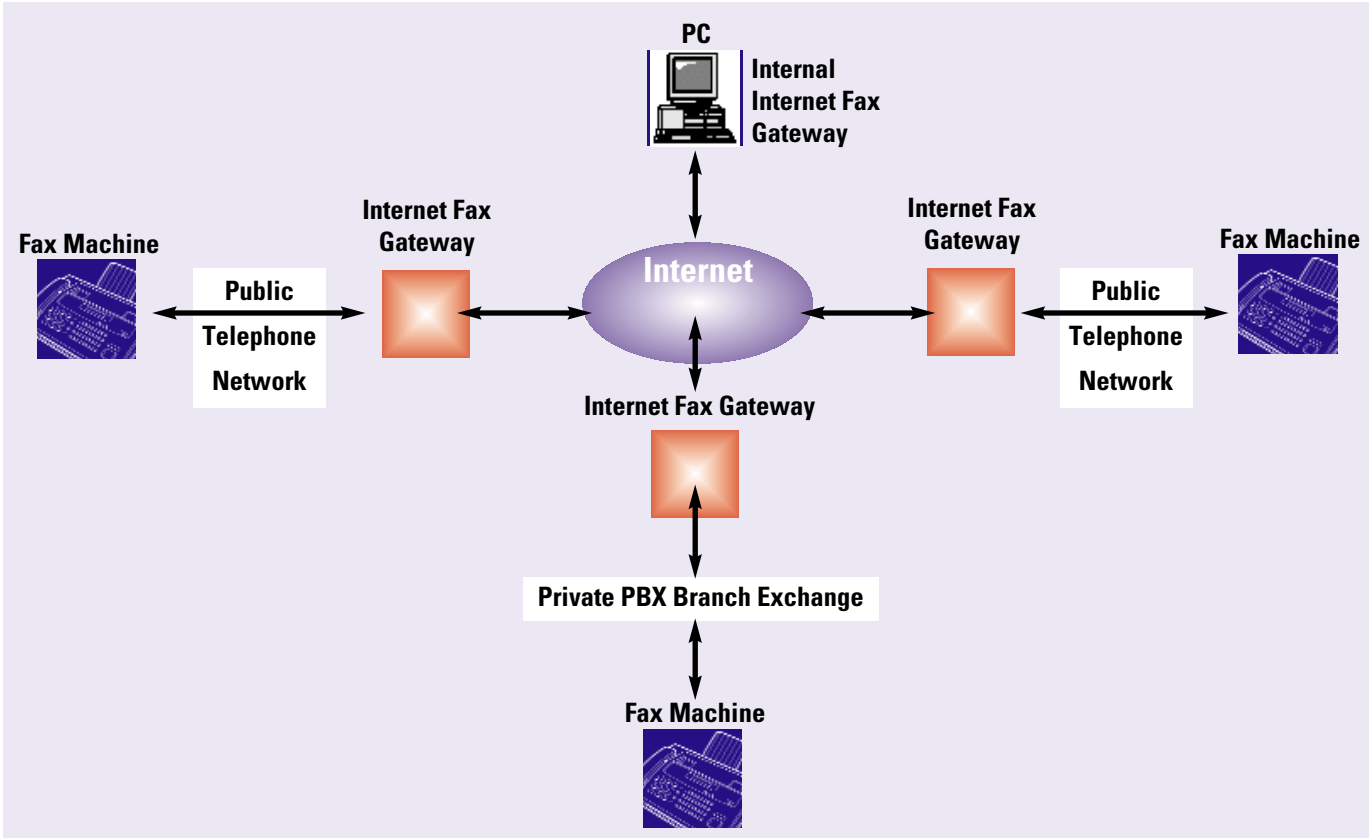
### Fax Gateways

Internet faxing is made possible through the use of fax gateways. A gateway is an electronic bridge between different networks. In the case of Internet faxing, fax gateways bridge the public telephone network and the Internet, allowing traffic to flow from phone lines to the Internet and vice versa. Here's how an Internet fax would be routed:

Let's say I want to send a fax from my New York office to my associate in London. I can send the fax as usual from my fax machine or my PC (standalone or networked). In either case, the fax is routed to my local fax gateway (in my PC or on a server) where it's broken into packets and sent on the Internet. When the packets reach the London fax gateway, they're reassembled into their original phone signal and routed to my associate's machine.

There are two basic types of fax gateways; which one you choose depends on how much faxing you do and whether you also want the gateway to transmit voice or video. (Instead of buying your own gateway, you can use an Internet faxing service, as I explain below.)

A CPU-based gateway uses a general-purpose PC to manage a fax board and the processing of signals between your phone lines and the Internet. Because processing is confined to the CPU, this solution can support only up to eight ports, or more specifically, eight fax lines. If you need only a handful of lines to manage your fax traffic, this kind of gateway may be the most economical.




**Internet faxing is made possible by fax gateways, which convert outgoing faxes into digital data that can be transmitted over the Internet and which translate that data back into analog signals that can be understood by a fax machine.**

For more bandwidth, you'll need a digital-signal processor (DSP) solution, which offloads processing to one or more separate DSP boards. The advantage here is that each board can support 24 ports, the size of a T1 connection. Unlike CPU gateways, DSP setups are highly scalable so hundreds of ports can be used at one time—enough to service any corporation or large service provider. Also, whereas CPU gateways can transmit only faxes, a DSP configuration can process fax, voice, or video. All you need is the appropriate voice or video software. If Internet telephony or video conferencing is in your plans, a DSP solution is probably your best bet.

### Buy or Rent?

Your next consideration is whether you should buy and deploy your own fax gateways, or subscribe to an Internet faxing service. Several companies currently provide such services (see sidebar), and more should follow soon—in particular, large ISPs who have already established a global presence. The issues here are how much you want to spend up front, where you plan to send faxes, and how quickly you can recoup your investment before having to replace or upgrade the technology (as I'll explain in a minute, you will have to upgrade).

As for cost, a CPU-based gateway built by combining fax boards from, say, Dialogic and software from, to pick another company, NetXchange runs about $1,500 per port plus the cost of a PC. The DSP solution is much more expensive. For example, Natural MicroSystems offers a package starting at $12,000 for all the gear plus a $350 per-port license, or $14,800 for an 8-port setup.

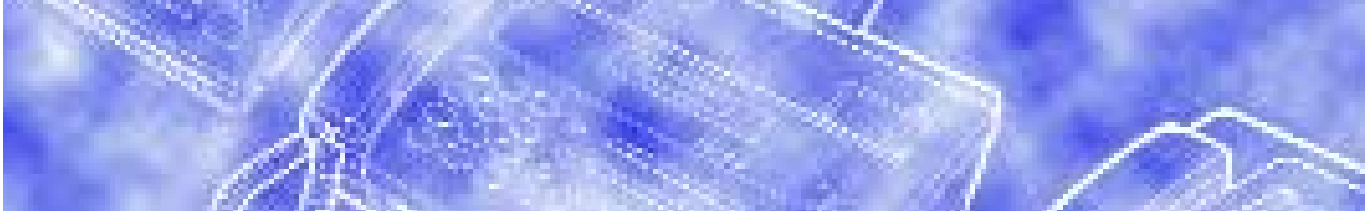
If you subscribe to an Internet faxing service, you avoid the hefty up-front cost but pay a little more for each transmission (although still much less than you're paying now). For most businesses, subscribing to a service makes the most sense as long as the provider has gateways where

## ANOTHER SOLUTION:
## An All-in-One Fax Gateway

Aside from faxing through an Internet faxing service or your own PC or LAN fax gateway, there's a third solution.

A Huntsville, Ala., company called TAC Systems sells an all-in-one fax gateway that sits between your fax machine and the telephone jack. About the size of an external modem, the FAXfree FAXportal automatically routes faxes from your fax machine to your Internet service provider or your LAN. You can send faxes to preprogrammed e-mail addresses or other fax machines equipped with FAXportal. If the receiving fax machine doesn't have a FAXportal, your fax will be routed automatically through the public telephone network.

Apparently the only such device on the market, FAXportal is well-suited for companies with several branch offices. It's easy to install and use, and comes in three versions: the 100 model, which can store 100 Internet addresses, is $295; the 500 model, which can hold 500 addresses, is $1,295. A 1000 model is also available. TAC Systems: www.tacsystems.com. ■



you need them. Unfortunately, few gateways have been deployed to date, leaving a lot of cities and countries out of reach. As an example, let's say you have an account with a service provider that covers only the United States and Western Europe, and you want to send a fax from New York to Prague. Your fax hops on the Internet in New York but has to hop off in Frankfurt, which is the provider's nearest gateway to Prague. The fax finishes its journey over the public phone network. Given the telephone rates in Europe, the price of that final transmission from Frankfurt to Prague may very well exceed the cost of sending your fax the whole distance via phone.

### Lack of Interoperability

Whether you buy or subscribe, be forewarned that you're investing in a proprietary solution that will be obsolete in a couple years. Currently, gateways from one vendor can't operate with gateways from another. It's as if people with AT&T phones could only talk to other people with AT&T phones. Service providers can typically deliver faxes to any location, but you may not get the lowest price if your destination isn't on the provider's network.

Discussions on an Internet faxing standard are still in the early stages, and it will probably be a few years before a useful standard is implemented. At that time, you or your provider will have to replace or upgrade your gateways to operate with the rest of the world. DSP gateways won't be rendered totally obsolete since they'll require only a software upgrade. Unfortunately, the processes that will need tailoring in CPU gateways are in the hardware, so these boxes will have to be scrapped.

### Transmission Delays

Another shortcoming of Internet faxing is that it just isn't as fast as over the phone network. You can spend more time feeding pages, and it takes longer for your fax to arrive at its destination, particularly for international transmissions. If you're faxing from a PC, you can probably proceed with other work while faxing takes place in the background. If you're using a fax machine, however, you may need to be patient.

The problem is that packets get lost and must often be resent one or more times before the fax is successfully reassembled and delivered at the other end. However, waiting an extra 10 seconds or so for a gateway to send and resend each page of a fax is really annoying only when you send a lot of pages.

Another source of delay: Most gateways operate in a store-and-forward mode. They take pages from you in real time and collect them at the local gateway before sending them across the Internet. Unfortunately, this two-step process can extend delivery time even more. You (or your PC) might wait several minutes for a confirmation only to find that the receiving machine didn't answer and the fax has to be resent. To better the odds that your fax makes it, most gateways offer fallback options where, if the receiving machine is not answering or is busy, the fax is routed to the recipient's e-mail address or to a private mailbox on the Web.

## Internet Fax Gateway Vendors

AimFax
www.aimquest.com

BCM International
www.bcmfax.net

Brooktrout Technology
www.brooktrout.com

Dialogic/GammaLink
www.dialogic.com

MICOM Communications
www.micom.com

Natural MicroSystems
www.nmss.com

NetCentric
www.netcentric.com

NetXchange Communications
www.ntxc.com

TAC Systems
www.tacsystems.com

VocalTec
www.vocaltec.com

Voice & Data Systems
www.voiceanddatasystems.com

## Internet Fax Service Providers

FaxSav
www.faxsav.com

ITSG
www.itsg.com

Link Relay Communications
www.linkrelay.com

NKO
www.nko.com

Universal Interactive Systems
www.uis.com

### Save Money Now!

Despite its shortcomings, Internet faxing may be able to slash your long-distance bills now. It's one of those rare IT applications that can pay for itself off the bat. If you're a large company with an established intranet and multiple offices scattered around the globe, it may be worth investing in your own fax gateways—even if your investment is good only for the short term. You'll pay more up front and again when you upgrade. But depending on your estimated payback period, you may still come out ahead.

If, however, you can find a provider with hubs where you need them, I recommend subscribing. You'll pay more per transmission than if you owned the gateways outright, but you'll save over using the phone network. Plus you won't risk obsolescence when standards emerge a few years down the road. Not many providers offer Internet faxing just yet, and their networks aren't extensive, but I'm convinced this will change. The case for Internet faxing is just too compelling for ISPs to ignore any longer. ■

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