Fax Purchasing Decision:
Fax Server or Fax Service?

A White Paper
Prepared by Davidson Consulting

Sponsored by

ESKER®

Davidson Consulting

806 S. Lakeview Avenue

Sturgis, MI 49091

269-651-3157

www.davidsonconsulting.biz

Table of Contents

Introduction

If you are a buyer who is interested in a fax system for your small or medium-sized business or large enterprise, you have a choice to make as to whether you want to use a fax server or a fax service. First you need to understand why you are making a fax purchase. Whether it is for faxing that your employees do every day or if you are contemplating automating an enterprise application, the decision to go with a fax server or fax service can make a difference in how much control you feel you have over your faxing operations and can also impact the costs you incur. In 2006, the market for fax servers grew just 0.4% to $280 million while the market for Internet fax services grew 26.4% to $570 million, according to two market research reports done by Davidson Consulting.

Businesses also may be considering whether to upgrade their existing fax servers. They may have many individual fax servers scattered among their departments and now are considering installing two large fax servers that will serve the entire enterprise. We say two fax servers because corporations are wise to offer some redundancy if they have large installations. It is far less expensive to consolidate fax servers than to have many servers for each department in an organization. For one, the number of fax boards required at each server in so many departments is much greater than the number used when servers are consolidated. Second, the amount of hidden costs will be much greater when one considers the maintenance of dozens of fax servers compared to just a couple. Then you can have a centralized maintenance staff. Another tactic that IT departments may consider is to have a single large server and a fax service to complement it. More on this below.

Perhaps you have a production fax application where you want to automate the unattended sending of hundreds of purchase orders overnight, potentially saving a bundle in labor and mailing costs while getting the purchase orders out to buyers more quickly. Production fax accounted for 33.7% of all fax server installations in 2006 and accounted for $86 million in fax services. You can handle this type of application from either a fax server or a fax service, although some IT personnel will feel more comfortable with an in-house solution because of a belief that it is insecure to ever have that type of data on an outside server. Nonetheless, many enterprises decide to go with a fax service to handle all their faxing needs, including production faxing. One reason that many enterprises decide to go with a service is because they don't have the personnel to manage an in-house servers and they want to lower the TCO of their fax solutions.

Either way, using an automated fax system has the primary benefit of enabling you to better manage your fax activity. For example, it enables your users to send files directly from their desktops, without having to walk to a fax machine, saving big dollars in labor costs. Moreover, it means that every file your workers fax can be automatically archived, a key requirement of many compliance regulations like the Health Information Portability and Accountability Act (HIPAA) and the Sarbanes-Oxley Act. Finally, every fax is automatically received in email, which means that faxes are not sitting as paper in fax machine out-trays and they, too, can be automatically archived.

Fax Servers

A fax server is comprised of server software that runs on a server and client software that runs on desktops. The fax server market is expected to grow at an 8.2% compound annual growth rate to $400 million in 2010.

The client software is what end users see and use. Typically, this client software is installed from a central point on the network. There is no need to install a separate client on every desktop.

There is conventional client software and then there is web fax software. Client software allows users to send faxes and to receive them, as well as manage their personal activity. Client software either allows users to send from personal applications in the same manner as printing, or it allows users to use their email interface to fax their documents. Typically, users can integrate their client software with any Microsoft application (e.g., Word, Excel, PowerPoint, Access) and often many other applications as well. Senders can attach multiple, mixed file attachments to a fax and they are converted to image files. Receiving faxes is as simple as opening an email.

Web fax client software is simply a web site that users access. Therefore there are no installation hassles involved. Workers simply go the web site every time they want to send or retrieve a fax. Often a web fax client will not have every single feature that a desktop client has, but web clients are catching up. And web clients are compatible with every type of desktop.

Fax server software handles the management and maintenance of a company's entire fax operation. Server software typically is compatible with leading server operating systems and enterprise email systems. The server software may be integrated with Microsoft Exchange email, IBM notes or any SMTP email programs. As well, fax server programs that support production faxing often support integration with SAP, Oracle and other enterprise resource planning and customer relationship management solutions. This is an area where the purchaser should be interested in the close relationships that some vendors have with key ERP players. For example, Esker has been a SAP partner for years.

During installation, many fax servers support adding users directly and automatically from an email system or from other computerized logs of employees. This can save a great deal of time compared with individually adding each user manually.

Fax server software also handles the routing of inbound messages from the fax server, where the message is actually received, to the individual end user desktops that are operated by the intended recipients of the messages. Fax servers support this inbound routing capability through a number of mechanisms that work in various ways.

First, there is direct-inward-dialing (DID), which works like a PBX with direct phone lines. The DID capability receives a wide range of numbers to a single phone trunk and it checks the last four digits against a routing table to determine where the phone call should be routed. This is the best form of inbound routing because it means the fax sender merely has to dial a phone number and the fax is automatically inbound routed. DID, however, may not be available for some older PBXs and it may be somewhat expensive relative to purchasing the DID phone numbers. DID (and ISDN, a similar routing technique used abroad) was used in 78% of all fax servers employing inbound routing in 2006.

Other methods that may be used range from manual routing, where a human being routes each fax as it arrives (used 5% of the time), to optical character recognition (OCR; used 2.5% of the time), where the name of the intended recipient is machine-read off the fax cover sheet, to dual-tone-multifrequency (DTMF), which is where the fax sender must dial an extension number (used 11% of the time), to line routing, where a fax server has multiple fax lines and calls to each line are routed separately (used 7% of the time).

Each of these other methods has the possibility of flaws: manual routing has human error, OCR has machine mis-readings of recipient names, DTMF has the extra requirement on the sender of punching in the extension number at the right time, and line routing is limited to only as many intended recipients as you have fax lines. So, DID is a clear winner, but again it is not always available with certain older phone systems.

Exhibit 1
Considerations for Acquiring a Fax Server

Does the server software integrate well with ERP programs from suppliers like SAP and Oracle?

Is the server software compatible with your email?

Is the server software compatible with the required operating systems?

Does it supports mixed-mode Internet and conventional faxing?

Does the fax server provide rock-solid reliability?

Does the server software support the inbound routing technique that you want to use?

If your inbound routing choice is for DID, does the fax server support a fax board that supports DID?

Do the management capabilities allow you to easily determine whether a fax transmission has been successfully completed and does it provide reports that show the status of each fax transmission?

Is it easy to add users from your email system or other computerized log of employees?

Does the fax server support Internet faxing?

Is the client software easy to use?

Is there adequately featured web fax software?

Can sent faxes be automatically archived?

Can you send multiple, mixed file attachments?

Is receiving faxes simple and are there ways to automatically archive the files?

Source: Davidson Consulting; Sturgis, MI; 2007.

Internet Fax Servers

There are also conventional fax servers and IP fax servers. Conventional fax servers hook up to analog phone lines and use the public switched telephone network (PSTN) to send and receive all fax calls. IP fax servers use the Internet to send all faxes and can receive all faxes via a gateway.

Internet fax servers accounted for $44 million out of the $280 million total market for fax servers in 2006. They are forecast to gain primacy over conventional fax servers in 2009 and to grow at a 50.7% compound annual growth rate to $245 million in 2010.

In general, there are no major differences in the capabilities that a conventional and IP fax server support. There is a difference in how they send a fax, however. A conventional fax server sends the fax over a conventional phone line, which involves a process called handshaking where the sending fax sends signals to the receiving machine to figure out how fast the transmission will take place, what compression method will be used, what error protection protocol will be used, etc. Then the call proceeds and when it ends, a confirmation (or an error report) is faxed back to the sending machine.

In an Internet fax transmission, the call goes over the Internet which creates a different environment from the PSTN. The Internet takes a call and puts pieces of each call into packets and sends them over different routes to the destination (a store-and-forward method of communication). With a fax call, this may mean sending a fax like an email so there is no handshake and the fax call does not receive a confirmation at the end of the session. Or else the fax call is sent in real-time (or almost real time) and a spoofing technique is used to fool the receiving fax machine that the call arrives in real time. This spoofing technique is key as a conventional fax call will fail at certain points during the handshake if a delay of just several milliseconds occurs. The receiving fax system must be fooled if a packet arrives out of order and is delayed. This delay factor has caused some concern among buyers that they won't receive the same kind of performance from IP fax servers as from conventional fax servers.

The huge advantage of Internet fax servers are that they may be used without fax boards. This is accomplished with software-only Internet fax servers that use the microprocessors in Internet gateways and routers that corporations already have installed. Sales of these board-less systems amounted to more than three times the sales of Internet fax server sales that included fax boards. A second advantage to using FoIP (fax over IP) systems is that a company may eliminate any costs relating to using the public switched telephone network, including line charges and PBX ports. This is especially important to companies that have eliminated all their PSTN infrastructure relative to installing VoIP services.

In the end, as time passes and vendors' products pass the reliability tests, the fears about Internet fax servers will go away. Cantata Technology, the dominant fax board supplier, has brought out the Brooktrout SR140, a real-time fax-over-IP capability and many fax server vendors, including Esker, have supported the SR140 for over a year. As enterprises install the Esker version of the Internet fax server and see its reliable performance, sales will pick up steam.

With so many enterprises moving to Internet voice, it is only a matter of time before the majority of fax server sales are for Internet fax servers. In the meantime, there is always the possibility of having a fax server support mixed conventional and Internet faxing.

Fax Boards

Fax boards are required with every conventional fax server. Fax boards handle the compression of images and they send and receive faxes. The great majority of fax board sales are for intelligent fax boards which have microprocessors on the boards that handle the very fastest of calculations that may cause fax transmissions to fail.

The first matter that a buyer must consider is what type of fax board to buy. Intelligent fax boards drive the highest completion percentages, but cost the most. These boards typically cost between $400 and $800 per port. So, for a 4-port fax server, a buyer can expect to pay as much as $3,200. For a 24-port server, a buyer is looking at an investment of about $14,000, for the fax boards alone. Buyers who are ready to take on the risks of using non-intelligent fax modems — including a lower percentage of fax calls that are completed and slower fax calls (due to slower handshaking, lack of bit stuffing, less efficient handshaking protocols) which translates directly to higher telephone bills — can acquire Class 1 and Class 2 fax modems that cost as little as $100 to $300 per port.

Most buyers decide to go with intelligent fax boards (in systems where fax devices are used, fax boards outsell fax modems by a ten to one margin), which gives an indication of how important a robust handshaking and call-completion capability is — and they end spending more than just the cost of the fax boards. Many intelligent fax board users also get an express exchange service, so if any of their fax boards fail, they can get a replacement within 24 hours. This adds about 15% to the cost of the fax boards.

A second option that fax board buyers have available is the capability to expand the number of ports just with a software key. This way, buyers do not need to go to a reseller to buy additional fax boards just to add a few ports. For instance, perhaps you want a 12-port fax board, and then when you begin to fax, you realize that you would like to have 16 ports. Generally speaking, the board that supports 12 ports can actually support up 24 ports. So, by getting a key from the manufacturer, buyers can expand the number of ports on their fax boards without going back to the reseller and buying a new board. This also costs more money, but less money than buying a new board and getting rid of the old one.

Fax Server Hidden Costs

Hidden costs are not just a matter of fax boards. A whole slew of hidden costs are involved with fax servers. These include costs for the following:

- Servers — on which the fax boards and fax software reside; depending on whether you dedicate a server to the fax function, this can cost well over $1,000 or can cost just hundreds if a server is shared. On top of the server hardware, the software (operating system) and the cost of securing this hardware in case of mission-critical faxing (clustering, stocking of a spare fax board, etc.) must be considered.

- PBX ports — to integrate fax server ports with PBX ports. These can cost hundreds of dollars apiece.

- Pre-installation consulting time — planning for large installations. Figure that this can cost about $300 per hour and involve up to a couple of days.

- Installation and configuration time — this is the time it takes to install the software on the server and the clients, the time to configure the software for each client, and the time to integrate the software with an enterprise application, and test the results.

- Per-administrator initial training time — the time to train network administrators to use and manage the fax server and then to train end users.

- Initial training time — the time it takes to train each end user at the average labor cost for end users and the cost for the trainer.

- DID one-time phone line installation charges — the setup of DID-enabled phone lines wherein, for example, there would be one phone line with 20 different phone numbers for 20 different users. Charges can be from about $0.50 per phone number to a $1.00 or more.

- Monthly phone line fee — the flat monthly fee charged by telephone companies for a single line or single T1 channel. These fees can range from about $10 to $30 per month.

- Monthly fees for DID numbers — also charged monthly by local telephone companies, the fees range from about $0.10 per month to about $0.30 per month per DID number.

- In-house support time — these are costs for administrator work for end-user help, patches, upgrades and system crashes.

- Vendor support and maintenance contracts — these contracts typically cost 15% of the initial cost of the fax server software per year.

- Cost of the up-front investment — these are the loan interest payments or the 'opportunity cost' of using cash to acquire fax server functionality instead of using it for some other purpose. Buyers should figure the cost at about 8% of total up-front purchase costs.

- Space rental — this is the cost to rent the space occupied by fax server equipment.

Internet Fax Services

Internet fax services offer all the same capabilities as fax servers — without the hidden costs and without any requirement for fax boards. Enterprise Internet fax services are expected to grow by 26.8% compound annual growth rate to $440 million in 2010. Individual Internet fax services are expected to grow at 24.4% compound annual growth rate to $670 million in 2010. With these services, businesses get the ability to send and receive faxes, the capability to manage their fax activity and, at least with Esker service, the ability to integrate fax with their enterprise applications. Esker also offers the ability to send documents via postal mail.

With a service, buyers have low up-front investment and gain the option of flexible costs depending on how much traffic volume they have. No software need be installed, since all operations take place off web interface. The one difference with services is that they offer virtually unlimited capacity, so if an enterprise has one mammoth fax job, it can be easily handled.

Conversely, if the enterprise were using a fax server, it would be constrained by the number of fax lines it had installed. It does not make sense to acquire more fax boards to handle just an occasional fax job, but if a company uses an Internet fax service, the capacity is there to handle every job. Another important aspect of fax services is the pay-as-you-go pricing model. The per-fax cost does not vary with the volume, as is the case with a fax server, because of the fixed cost of the fax infrastructure.

Does the service provide your company with all the functionality your business needs and does it provide rock-solid reliability? Does it integrate well with any enterprise or desktop as that you use? Is it possible to automatically archive each sent and received fax? Is the pricing easy to understand and is it acceptable in terms of its total cost? If you find acceptable answers to these questions, then perhaps a fax service will suit your business.

Exhibit 2
Considerations for Acquiring a Fax Service
Does it integrate well with desktop and enterprise applications that you use?
Does it provide management capabilities to allow your company to easily add and change users?
Is the pricing easy to understand?
Is the fax service easy to use?
Does it provide all the functionality you need?
Does it provide rock-solid reliability?
Does it eliminate the need for in-house support?
Is it possible to automatically archive each sent and received fax?
Can you generate reports to determine the final status of all fax transmissions?
Are there no hidden costs?
Source: Davidson Consulting; Sturgis, MI; 2007.

Fax Server or Fax Service?

At the end of the day, the buyer is still faced with a decision of whether to go with a fax server or a fax service. A fax server offers tighter integration with applications (Exchange, Microsoft applications, SAP applications, Oracle applications) than many fax services. It allows an IT infrastructure to retain control over the in-house fax server and it allows IT access to greater customization capabilities. Fax servers also offer mature technology which may be more comfortable to many late adopters.

On the other hand, buyers must balance those advantages with the costs of fax servers, including software, hardware and the long list of hidden costs. If a fax server is acquired, the enterprise must deal with its fixed capacity. And then enterprises must manage hardware failure situations, which often requires expensive back-up plans. One of the options to overcome this is to purchase a fax server that allows traffic to be diverted to a fax service in cases of hardware failure or unexpected peaks of traffic that the internal hardware has difficulty processing in a timely manner. By choosing this option, the enterprise gains tight integration of local applications as well as the unlimited capacity of the fax service model. This model ensures service continuity because the fax service provides overflow capacity and turns into a failover system, should the fax server ever go down. Nevertheless, it does not take away most of the issues linked to the in-house fax server.

If a fax service is to be used, corporations will benefit from the very low up-front investment and the flexible costs that vary with the amount of traffic they have. Another benefit is not having any software that needs to be bought or updated. And enterprises have unlimited capacity to get large fax jobs done quickly. Finally, there are no hidden costs with fax services.But an IT department may feel a loss of control when using an outside system to handle its fax traffic. Just adding a few users can involve delays. And the per fax pricing of a service can seem expensive for smaller volumes, although they can be justified by a look at the hidden costs involved with a fax server.

One company, Esker, offers both fax servers and fax services. When shopping for a fax solution, why not go to the company that can offer you all three levels of solutions?

Exhibit 3 Fax Servers Versus Fax Services — Pros and Cons			
	Fax Server	**Fax Service**	**Server + Service**
Pros	▪ Tight integration with local applications (Exchange, SAP, Oracle) ▪ Control over in-house fax server ▪ Higher customization capabilities ▪ Mature technology, comfortable for late adopters	▪ Low up-front investment ▪ Flexible cost varying with traffic ▪ Unlimited capacity ▪ No software to install or update ▪ No hidden costs	▪ Tight integration with local applications (Exchange, SAP, Oracle) ▪ Variable capacity of the service ▪ Ensures service continuity (overflow and failover)
Cons	▪ Cost (software, hardware, hidden costs) ▪ Fixed capacity ▪ Requirement to manage hardware failure situations (expensive backup plans)	▪ Feeling of loss of control ▪ Per-fax pricing may seem expensive for smaller volumes	▪ Cost of the server model (software, hardware, hidden costs) ▪ Cost of the service model (when used for small volumes)
Source: Davidson Consulting; Sturgis, MI; 2007.			

About the Author

Davidson Consulting publishes market research, newsletters and also offers custom consulting in the area of facsimile. The company published *Fax Messaging Markets, 2005-2009*, a report that covers internet faxing, broadcast faxing, and production faxing as outsource services. The report covers market growth in revenues and also shows Internet fax subscribers. Internet fax is covered in terms of both enterprise and individual market segments. The report shows 16.9% compound annual growth for the total market for fax services, from $770 million in 2005 to just over $1.4 billion in 2009. Davidson Consulting also published *Computer-Based Fax Markets, 2005-2010*, a report that covers the fax server and intelligent fax board markets. The report covers market growth in terms of both units and revenues. The report shows 8.2% growth to $400 million in fax servers in 2010.