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# **Analyzing Total Cost of Ownership for Internal vs. Hosted Fax Services**

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## Executive Summary

IT executives are under constant pressure to do more with less. While they have addressed costs in most technology areas over the past few years, one area of potential savings that is often overlooked is sending and receiving faxes. In most cases this is because faxes are not really considered to be an IT asset in the traditional sense, and they are viewed as a minor contributor to the overall business. This is the case despite research showing fax use in business continues to increase year over year.

Most companies have years of legacy fax systems in place. While many executives are certainly aware that these devices exist in the enterprise, they have become a part of a "forgotten" set of legacy equipment. As a result, it is often unclear what the real costs are for maintaining and operating these assets. For example, an enterprise that faxes 10,000 sheets a day could incur a \$125,000 annual telephone charge, not including circuit costs or engineering maintenance costs. IT executives should therefore examine ways to reduce the total cost of ownership (TCO) of faxing in the enterprise to determine if savings can be achieved without impacting productivity or service.

There are three ways in which companies can fax information today:

- **Stand-alone fax machines.** In this case, each individual fax machine has its own phone line that dials out its own fax number. These machines are easy to install, but cumulatively can be very expensive in large distributed organizations.
- **Fax server.** This is essentially an application-specific computer that can have several ports connected to dial phone lines for sending and receiving faxes. The fax server can take documents sent to and from an internal company network and convert these documents to fax images for sending across fax lines.
- **Internet fax services.** This method allows companies to send and receive faxes using their Internet connection as the medium for transmission rather than a separate phone line. In addition, the faxing is done as an outside service, so no infrastructure needs to be built or operated by the user in order to access these services.

Fax servers have tended to be the solution of choice for small to large enterprises in the past few years, due in large part to their greater operational efficiency (versus individual fax machines). They offer numerous benefits over stand-alone fax machines, including increased security/privacy, increased productivity through direct delivery to the desktop, and scalability.

Yet one of the key findings RFG has discovered is that owning and managing fax servers usually has many hidden costs. These costs can include higher installation and deployment costs, integration costs, and overspending on excess capacity, networking/telephony and maintenance costs. They also add to IT's burden by creating another complex system that needs to be managed.



Now, as many organizations are starting to implement voice over the Internet (VoIP) technology, which itself moves away from analog phones lines, things become even more complicated and costly. These trends are creating a situation where it will become more difficult to support fax servers in future IT infrastructures.

In addition to the obvious capital and operational costs issues associated with fax servers, an equally significant area of concern is the lack of ability to manage documents and data going through these systems. Integration of faxes into a document management system is an important function for fax management, as well as being able to address any security and compliance issues that are likely to exist with the inability to track or manage documents coming through these systems. In fact, it should be noted that faxes predominantly tend to be legal documents requiring privacy protection and/or signatures. These documents can have a direct impact on Sarbanes-Oxley (SOX) compliance, and thus need to be managed better. For example, faxes of medical records sent into an open unattended or unsecured area could be construed as a Health Insurance Portability and Accountability Act (HIPAA) violation.

RFG believes IT executives need to take a close look at the exposures that exist as they relate to fax servers. This can be done by first analyzing the business requirements, especially the volume of faxes and departments affected, which will then allow IT executives to see what exposures exist. Once this information is obtained, executives should compare the costs, benefits, and risks associated with fax machines, fax servers, and Internet fax services to determine which best suits their particular enterprise.

The requirements for effective fax services fall into six main areas: control, cost efficiency, integration, manageability, scalability, and security. The relative importance of each of these issues will vary based on the nature of the company and its specific situation. However, with the increased importance of compliance and security all companies face, these issues cannot be ignored.

RFG has seen that Internet fax services offer the same benefits as fax servers, along with improved mobility, significantly reduced downtime, scalability, and better security. In addition, because the infrastructure is outsourced there are no hidden maintenance, capital and operating costs.

While many companies have "sunk costs" with the capital expense of legacy fax servers, the ongoing operational costs, flexibility, quality of service, and security may still indicate that moving to a fax service provides the best combination of value of a significant number of business scenarios. IT executives should look at outsourced fax services as a way to increase business efficiency, while improving both document management and security.



## **Business Overview**

Many IT shops RFG works with are struggling with the cost and challenges of maintaining and operating fax systems. The cost to maintain fax services for a typical organization can run \$375,000 per year for engineers and more than \$200,000 per year for fax circuits, not including the cost of actually sending fax messages.<sup>1</sup> These systems have been used since the 1980s to move business information, particularly information requiring a signature, from one destination to another.

Many companies continue to rely on the ubiquitous presence of fax machines, and the straightforward manner in which documents can be sent from one place to another. While electronic signature mechanisms do exist, many users and organizations are uncertain of them and thus continue to rely on fax technology to transmit documents such as contracts, medical records, and prescriptions. Because of this, IT executives will have to balance the value of faxes against the cost of maintaining and operating legacy infrastructure.

Fax machines also introduce an element of security risk by their very nature. They normally sit in open areas, where anyone walking by can see the contents, make a copy, or even remove an important fax from the machine. Even if removed accidentally, a lost fax can create delays in conducting business; if removed on purpose or tampered with, they can create a potentially costly security leak.

Some improvements have been made in the last several years by employing fax servers in place of standalone fax machines. These systems allow employees to send and receive faxes at their desktops via email and other channels rather than having to go to a dedicated machine in a common area. This increases employee productivity by minimizing the time it takes to prepare documents to fax, and increases flexibility. However, the variations in volume of fax use make it difficult to right-size the fax server to meet the needs of the enterprise. On top of this, business managers do not currently use the fax server environment to manage the raft of documents that are sent through the servers, due to the complexity of setting up fax servers for document management.

## **Document Management Automation**

RFG has seen IT executives struggle with how to automate the management of data, with an entire industry growing up around document management. While electronic documents have their own management challenges, fax server-based documents are far more difficult to incorporate into existing document management systems due to often incompatible formatting requirements. Yet it is critical that this information be brought into the system both to provide a more complete picture of the business and to comply with regulations such as HIPAA and SOX.

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<sup>1</sup> Cost based on 50,000 people supported in a distributed environment, fax server density of 1 per 200 employees. Source Robert Frances Group.



Generally speaking, the data and information that constitute the critical, essential value of the business is difficult to manage under the best of circumstances. Much of the information exists in multiple data stores. Even more difficult to track is the leakage of information outside of the enterprise. Without a reliable means of including faxes in a document management system, organizations will be seriously challenged to maintain the level of control required in today's business environment.

When IT executives do not know where the information that controls their business is kept, and do not have a reliable means of tracking it electronically, business risk is significantly increased. Automated document management solutions are critical to the mitigation of these risks in the enterprise environment.

## ***Requirements for Enterprise Fax Solutions***

### **Availability and Accountability**

IT Managers want to have the ability to predict the performance of their environment, and this is equally true with fax capability. Business needs systems to be highly available, so that business processes are never interrupted. RFG has found that many IT executives are concerned about the availability of fax machines and fax servers that are usually put in place in a non-redundant fashion, and subject to physical failures, fax supply depletion, and telephone system unavailability. Additional considerations include the deployment costs necessary to achieve the appropriate level of availability, and effective administration and management of the associated infrastructure. IT managers also need the ability to be able to report to management on the cost and performance of the systems once deployed. Additionally, they need to be able to track the location and status of both inbound and outbound faxes, since they often are critical documents to the business process, often related to business contract and other sensitive and important issues.

### **Cost Efficiency**

In addition to the control and security risks, IT continues to run on a constrained budget. IT executives are constantly being asked to find ways to reduce the operational costs of all IT infrastructure components. However, the cost of fax servers, the people to manage them, network connectivity, phone lines, and software for clients, all tend to increase proportionally with volume increases.

Fax systems need to use resources as efficiently as possible. Many companies are now consolidating disparate servers into a centralized data center, since most IT executives realize that they can no longer afford to have each application running on a dedicated server at 10-15% utilization. What IT executives need is a mechanism to handle sudden increases in fax demand in a cost-effective, scalable, and secure manner.



Perhaps as important as the cost of operating fax servers is the time and cost involved with integrating them into the existing IT infrastructure. Savvy IT executives are looking for fax systems that can interface with all elements of communication, including email, legacy systems, and unified messaging.

### **Scalability**

Rapid growth is often a business requirement RFG sees many IT managers struggle with. They have to determine how to take advantage of dramatic new opportunities with the catch-22 of not having the money needed to support growth even though the growth itself was what supplied the funding. In one case, a large retailer planned on growing one store's capacity from 4,000 faxes a day to 10,000 faxes a day. Another store had a growth requirement from 100 faxes a day to 50,000 faxes a day. With such rapid growth, it is difficult to keep ahead of equipment requirements to match this level of throughput within a fax server environment.

### **Security**

Fax systems need to be free from tampering. Many of the documents that are faxed have sensitive customer information that needs to be protected. Regulatory laws such as HIPAA and Sarbanes-Oxley need to be followed for protecting information as well. Additionally, regardless of the level of logical security provided, fax systems and their documents are subject to physical theft. For fax servers, money needs to be spent on planning and implementing security measures to protect the fax environment. Compared with electronic systems in the infrastructure such as databases and directories, information sent through fax systems is typically not as tightly controlled, yet often represents a significant security exposure to the company.

## ***Analyzing Costs Associated with Internal Fax Servers***

When organizations consider moving from a fax machine to a fax server environment, the cost analysis is frequently limited to acquisition costs. The total lifecycle costs for fax servers, including licensing costs, personnel costs, implementation and integration costs are oftentimes ignored. This is a mistake, as the total cost of ownership includes several key factors that should be considered.

### **Capital Costs**

Capital costs for fax servers including the cost of the hardware, software, design and deployment costs. Hardware costs will vary depending on the volume of faxes that need to be done, and the number of ports the server uses. Typical costs for standard fax servers are in the range of \$2000 for a server that has one port. Additional hardware costs include the fax machines that may be used, and the physical plant to operate the fax servers, air conditioning units for system cooling, uninterruptible power supplies for improving availability, and mounting racks for fax servers.



Large systems are designed to accommodate, in practice, up to 250 people. Looking at average fax rates for 10,000 faxes per day, this equates to three large servers. With a conservative price of \$4500 per large fax server being added or refreshed each year, plus \$810 annual maintenance per server, this would be \$6,930 per year for fax servers plus maintenance.

Other capital costs include software licenses for server and for users, gateway software for unified messaging and email systems. Additional software costs need to be spent for operating system costs and any database costs.

Once systems are purchased, costs are incurred to develop, test, configure, and implement the fax servers into the business environment. RFG finds that one of the larger hidden capital costs is that associated with integrating the fax server into the overall business environment. This usually involves building gateways into existing email and voicemail systems, and any other unified messaging that might be in the environment. These integration efforts usually take several months, with costs ranging from \$10k to \$45k.

### **Operational Costs**

In addition to the capital outlay, there is a significant ongoing cost associated with fax servers. These costs include software maintenance costs, which typically run between 18 and 20 percent of software list price. In addition to software maintenance are networking costs and the personnel costs associated with system upgrades and patch management.

These servers will need engineering maintenance. With only three servers, this would require a fractional employee, which would run \$11,250 annually. Annual phone charges for this fax rate would equal \$125,000, with an additional annual circuit charge of \$4800, bringing the total annual internal fax service charge to \$147,980.

RFG finds that many enterprises have at least one person dedicated to the maintenance and operation of the fax server environment. While the staffing ratios for servers to full-time engineers (FTEs) is typically 20:1, the amount of time an FTE spends dedicated to maintaining a fax server is typically higher than the general ratio would suggest. There usually are not as many fax servers in a typically business environment, so companies end up dedicating one person for partial support. This often ends up becoming a full time dedicated person. This rate can be estimated to cost \$5k per month at a minimum.

Training and networking costs are other operational expenditures that need to be added to the personnel and software costs. Training is both for the people that are using the fax system environment as well as the help desk personnel and any people associated with the maintenance of the fax server environment. Networking costs include additional T1 and fractional T1 circuits needed to support the fax lines, plus any long distance charges associated with the transmission of faxes.

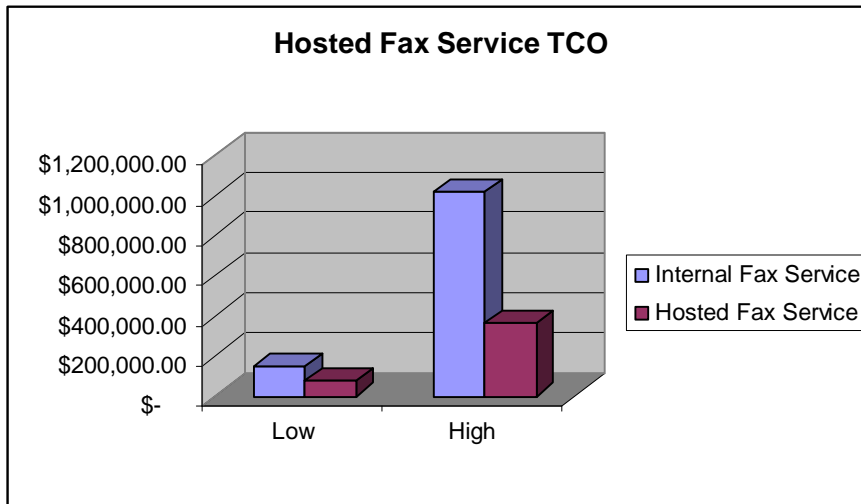


Network bandwidth costs can range from \$400 - \$750 a month per T1, depending on geographic region. Telephony costs will range from \$.03 to \$.10 a minute for North American calls, to over \$.75 a minute for international calls. Depending on the fax technology in place, these circuit charges can be around \$15,000 per month for a 10,000 page per day operational rate.

These costs, unfortunately, assume that all faxing can be done at a central location, which is not the case in reality. Typically, employees doing the faxing are dispersed throughout the enterprise. Additionally, faxes occur during peak times of the day and are not spread out evenly through a 24 hour period. Given normal corporate office distribution, a typical scenario for fax servers is more likely to be 200 servers for 50,000 employees. These servers are usually distributed with 75% being smaller servers and 25% larger servers, with a similar distribution of smaller fractional T1 lines to support smaller sites.

This distribution will lead to a higher practical FTE ratio, since it will take more administrators to support a larger number of servers over a distributed region. This more typical distribution will bring server costs to \$308,000 annually. Administration costs will increase to \$375,000, with annual circuit costs of \$211,000. With a similar long distance phone rate, this brings an annual internal fax service cost to \$1,019,000.

When these numbers are compared with the costs of outsourced Internet fax services, which will vary between three to ten cents for faxes depending on volume, locations, and negotiated pricing, the savings are dramatic. Annual costs for a similar scenario for Internet fax services will range from \$75,000 to \$365,000. This brings the typical measurable operational savings from \$73,000 up to \$654,000, which represents an annual savings between 49 to 64 percent, dramatically lowering TCO. This savings does not include more difficult areas to measure, such as the time to integrate fax servers into other infrastructure elements.



**Figure 1 Fax Service TCO Comparison**

**Source Robert Frances Group**



## **Fax Server benefits**

Owning fax servers do have some benefits. These include direct access to machines and no direct per user costs. If the volume of faxes that need to be controlled is performed at a specific point with very high volume, then infrastructure can be put in place that is dedicated to high volume performance for sending high density fax volumes. However, in the vast majority of circumstances, it appears that the costs of operating a dedicated environment far outweigh the benefits.

## **Fax Server problems**

### **No centralized Control**

Asset management can be a huge problem for managing a fax server environment. Often, different departments own and control their own fax machines and/or fax server. When this happens, there are no centralized acquisition costs applied, which means that pricing for systems is higher than it has to be and the hardware that exists, which is usually underutilized, has been over paid for based on the total enterprise volumes. In a similar manner, no centralized telephony costs are often established for fax lines.

On top of the lack of centralized control is the fragmented management of the fax server environment. Not only does this decrease availability and performance, but it usually incurs increased FTE costs for shadow IT support in business units that purchased the systems.

In addition to the lack of control is the problem with document lifecycle and document management. As mentioned previously, typical fax servers do not have any way to integrate into enterprise document management. This causes document management problems, along with a lack of control over intellectual property. This issue will only increase in importance with the government-mandated focus on governance, compliance, and security controls placed on companies. Not to mention the public awareness of data loss and its damage to corporate reputation.

### **Security Exposure**

Perhaps one of the most important yet neglected issues with respect to fax server management is the control security. With the numerous examples of lost customer data and intellectual property, control of sensitive information is more important than ever.

On the one hand, physical theft of fax machines can happen, which renders the end users without the fax capability. Unless there is a document on the machine, however, the data itself remains with the organization.

In the case of a fax server, however, there is definite data risk due to the lack of direct control of the information that is being sent via fax servers. While the server itself is less likely to be physically removed, if the system is broken into, the information that goes



through the system may subject to theft, with little ability of security personal to understand the sensitivity of the information taken. Historically, fax server systems have not received the same level of security attention as other communications applications such as email, so RFG believes the potential for data theft in this manner warrants significant concern and a thorough review.

### **Lack of ubiquity/no network /web access**

With the great number of shadow fax systems that are typically in the enterprise, RFG finds that often there has not been any central planning for network bandwidth or telephony costs. This makes it difficult if not impossible to guarantee that fax utilization will be effective everywhere. In addition to either paying for over-provisioned capacity or having ineffective services, the employee is usually unable to centrally get vision into fax resource utilization, making management more difficult.

With most infrastructure productivity functions being available via a Web access, having fax services that do not have this capability decreases employee productivity and makes it difficult, if not impossible, for line of business (LOB) managers to understand the costs and effectiveness of the fax services the business relies on.

### ***Costs and Benefits Associated with Internet Fax Service***

#### **Costs**

The costs associated with Internet fax services are relatively straightforward and easy to calculate. The costs associated with the service are directly related to the amount of faxes that are consumed. There are typically different tiered plans that can be purchased based on expected and actual usage.

The advantage of purchasing services in this manner is that the business only pays for the services it consumes. There are not wasted purchases of infrastructure that is not needed, no purchasing of bandwidth or phone lines that are not required.

Because the infrastructure for Internet sending and receiving faxes is owned and operated by the service provider, the business does not end up bearing the burden of ongoing, and often unexpected, operational costs. There are no maintenance costs for equipment. There are no maintenance costs for software. There are no hidden administrative training costs or shadow IT personnel to pay for. The lack of hidden costs and maintenance costs makes it much easier for IT executives and LOB managers

#### **Service Benefits**

In addition to the directly measurable cost benefits, fax services offering the IT executive several significant benefits. These benefits generally fall in the areas of availability, control, scalability and security.



IT executives have a tighter control of the documents they are managing. Because Internet fax services can track the documents that have been both sent and received, a tight accountability of information can be maintained. When this information is integrated with centralized document management systems, a thorough control of company intellectual property and sensitive information is maintained.

Not only does this control aid in accountability for compliance, it further assists the overall enterprise security posture. First, since no physical resources are used on the customer premises, there is no problem with the physical security of fax machines or fax servers. Second, the ability to access sensitive information from an Internet fax service without proper authorization is much more difficult. Encryption is used for transmitting data, which further protects information transmitted via Internet fax services.

In addition to security, the reliability of the fax service environment is dramatically enhanced. Fax services automatically provide the enterprise with redundant infrastructure that has no additional costs associated with it, since this redundant infrastructure is built into the costs of the fax service. The net effect of this is that users of fax services usually experience no down time for the fax service. Costs can be controlled via the leveraging of the fax service infrastructure across multiple clients, which enhances effectiveness, efficiency, and reliability.

This increase in efficiency also directly enhances environment scalability. This is especially valuable for smaller companies that are cost constrained, but at the same time undergoing rapid growth. Ease of setup of fax services can reduce training costs, and typically has a minimal impact on installation costs.

## ***Conclusion***

Despite impressions to the contrary, the requirement to fax business information has continued to grow over the last twenty years. In fact, as a result of Sarbanes-Oxley and other security and compliance regulations, the need for proper accountability of information and reporting on auditing the business has increased, and is only likely to increase more in the future. However, faxes are often overlooked as part of this accountability requirement.

At the same time business movement is increasing the need for faxed information, the requirements for control and security make faxes a more expensive operation, at a time when business is under pressure to control escalating IT costs.

The alternatives that exist today for IT executives are to build their own fax server infrastructure or to consider going with an Internet fax service. Each option has its own costs and benefits.



While there may be some sense of direct control by building a fax infrastructure internally, RFG has found that there are usually more costs and less control than executives would like to admit. In addition to the direct hardware and software costs, there are usually additional hidden costs, such as the requirement (or unknown existence) of shadow IT staff for support, and additional unplanned-for costs associated with development, testing, and especially systems integration. In addition to the hidden costs, there is usually far less control of the fax infrastructure than is supposed, with various LOB elements acquiring their own unplanned infrastructure. All this leads to more costs, less control, and less security.

As an alternative, Internet fax services offer well-defined, easy to calculate costs, with none of the infrastructure planning or costs associated with building a dedicated fax environment. Typical operational savings should run from 49 to 64 percent of the costs of building and running service internally. At the same time the hidden costs are not incurred, security is improved, control is established, and documents are better managed with increased security.

RFG believes that many companies can take advantage of the combination of control, efficiency, scalability, and security that Internet fax services can offer. While it is unlikely that external controls will decrease or that cost pressures will abate, it is possible for IT executives to improve the total cost of ownership of their company fax environment while improving control, security and service to their constituents.

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