

## **Make Documents Appear and Costs Disappear: How Digital Document Storage Can Help Reduce Costs**

*A detailed overview of how small and medium-size businesses can use electronic document storage systems to archive, retrieve, and share critical documents more efficiently, securely, and affordably.*

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## Executive Summary

Lost documents create ripples of inefficiency throughout any organization. They can be especially devastating for small and medium-size businesses (SMBs), which are more vulnerable to workflow disruptions. In these environments, document storage solutions that provide fast, accurate storage and easy management can significantly boost productivity, improve security, and reduce operating expenses.

Traditional methods of storing paper have become even more inefficient, expensive, and unreliable by way of comparison to today's digital technology. Digital document imaging — the process of converting paper documents into electronic files — serves as the catalyst for today's innovative electronic document storage systems. Now, companies can effectively store hardcopy files electronically. Digital document imaging technology captures these documents at their source, enabling organizations to reduce the manual touchpoints that frequently result in lost or misplaced documents.

Electronic document storage solutions enable organizations to archive, access, and retrieve documents more quickly and efficiently. They also minimize risk by protecting sensitive documents against unauthorized use. In general, today's electronic storage systems are less expensive, more secure, easier to use, and more reliable than traditional paper storage methods.

Even though more businesses are trending toward digital storage systems, it is not an all-or-nothing endeavor. Companies can implement scanning, storage, and paper-to-digital technology into existing processes at any time, for a gradual, cost-effective transition to digital records.

This white paper examines current document storage methods and explores affordable alternatives that can help SMBs as well as departments within larger organizations store critical documents more efficiently and cost-effectively. There are many factors to consider before an organization can determine the best method for digital document storage. The most critical step is choosing a knowledgeable, experienced partner that can analyze document use in your organization and propose a plan that maximizes your staffing, IT, and financial resources to meet specific business requirements.

# Introduction

*“The average U.S. employee spends up to half of the workday searching for information.”*

— PricewaterhouseCoopers

Document storage remains a critical, yet largely overlooked aspect of business efficiency. Currently, there are more than four trillion paper documents stored in the U.S. and the figure continues to skyrocket with a steep annual growth rate of 22 percent.<sup>1</sup> Powerful print technology allows businesses of every size to produce millions of documents — including transaction receipts, billing, personnel records, and other proprietary and confidential information — that must be securely stored, yet remain accessible for authorized users.

Historically, the most prevalent storage method has been to manually file paper documents into cabinets, shelves, or other receptacles — an expensive, labor-intensive process that includes labeling, sorting, indexing, and stapling. In fact, a recent study reports that companies spend \$20 on average to file a single document, \$220 to reproduce a lost document, and \$120 to find a misplaced file.<sup>2</sup> Consider the time it takes to recover lost or damaged documents. Now consider how this delay affects customers. Storage inefficiency cannot be hidden forever. And the worst-case scenario is that customers are the first to notice it.

*“It has been estimated that it costs more than \$20,000 to fill a five-drawer file cabinet with paper documents and more than \$2,100 annually for its maintenance.”*

— PricewaterhouseCoopers

More than 10 percent of paper documents will either be lost or misplaced at some point during their life cycle, according to research conducted by PricewaterhouseCoopers. As a result, many companies may have thousands of missing or lost files. And each one could potentially cost hundreds of dollars as employees spend a significant amount of time locating, tracking, and refiling paper documents and files.

<sup>1</sup> Source: International Data Corporation

<sup>2</sup> Source: Gartner Group

### Trending toward electronic storage systems

With the emergence of digital document imaging technology, organizations can accommodate the growing demand for storing hardcopy files and other documents that are not application-generated, and therefore, not stored electronically. Document imaging converts these paper documents into electronic files and stores them in digital applications and repositories — collectively referred to as electronic storage systems. Many of these solutions enable users to retrieve and share files within seconds, which streamlines workflow, boosts productivity, and expedites customer response.

Typically, an electronic storage system includes hardware and software for the capture, scanning, indexing, storage, printing, and tracking of documents. Hardware components may include a digital multifunction product (MFP) for scanning paper documents, a secure electronic filing and retrieval system, and dedicated backup services for redundancy. Software components include indexing and retrieval applications, which capture essential data such as the name of the person retrieving the file and the date and time of the transaction. Authorized users should be able to easily retrieve an automated report chronicling transaction history for a verifiable audit trail.

An electronic storage system comprises five basic components:

1. Scanning tools to capture source documents and import them into the system
2. Indexing options to organize documents
3. Archive and storage applications
4. Retrieval tools to locate documents
5. Access control, enabling authorized users to retrieve documents

Organizations are aggressively implementing a wide range of electronic storage systems to make document storage more accurate and cost-efficient. But its adoption in many organizations will take time. Most organizations lack the technology and systems support required to make an immediate, full-scale transition to electronic document storage. Fortunately, there are many document storage systems available that can serve the specific storage and retrieval needs of SMBs and department-level offices.

This white paper reviews existing document storage methods and explores affordable alternatives. It also provides information to consider when implementing a storage system and guidelines that can help you store critical documents more efficiently and cost-effectively.

### Examining Document Storage Methods

Most companies produce a predictable mix of documents. They also have certain preferences and conditions that ultimately dictate how these documents should be stored. Because most documents will be accessed more or less frequently at various times during their lifecycles, the storage methods you choose for them may change as well. Before we can address the intricacies of any document storage system, let's examine the two stages of documents:

**Open transactions** are active documents that are being used to fulfill a business purpose. These documents are shared with multiple users and accessed frequently. Most companies use open documents for daily transactions such as invoices, credit memos, and purchase orders as well as collaborative efforts such as contract negotiations, product spec sheets, and white papers. It is in this phase that imaging technology is required to capture (scan), facilitate workflow, and distribute the document. Documents that pass through an approval process are open transactions. As a result, immediate access to the document is essential for everyday business activities. Eventually, most of these transactions will close, which will change the way they should be stored.

**Archive documents** are closed transactions — including tax records, paid invoices, order shipments, employee personnel records, and pension records — that are inactive, but remain in existence for legal or proprietary purposes. These documents should be available in read-only format. The primary concerns for archive documents are the type of media used for long-term storage and electronic file format.

Most archive documents were once open transactions that have since been closed. For instance, a delivery ticket is an open transaction as various users access it during the pick, pack, and delivery process. Once the good or service is delivered to its destination, the delivery ticket is no longer accessed as frequently. Because it is not subject to change, it becomes a closed transaction and the document is then archived.

#### How documents are stored

Staffing, IT, and financial resources vary significantly among companies. As a result, available resources often dictate what document storage methods an organization uses, rather than workflow efficiency. The level of sophistication may vary, but we can safely assume documents are being stored using one of the following methods:

- 1. Online (magnetic media)** is typically a hard disk drive or Web-based online storage service for instant document storage and retrieval. Since it offers the fastest access to documents, online storage is used for documents that are frequently viewed or need to be altered. As a result, typical online documents are less than 180 days old. Generally, online storage is not used for infrequently accessed documents as it would be a waste of space and resources. However, as the cost of online storage continues to decrease, the typical document retention time of online media will increase. With online media, stored documents do not require physical intervention when retrieved, therefore its growing popularity comes as little surprise. (For many companies, response time can be the most powerful weapon against customer churn.)

Most online storage systems use multiple hard drives that appear as a single storage entity, which enables users to store large volumes of documents. These systems can protect data against loss or damage by providing redundancy and fault tolerance. The usual disaster recovery caveats apply to reduce the risk of data loss. IT personnel should routinely back up hard drives to ensure documents can be restored if they are erased or damaged.

Web-based online storage services enable SMBs to share stored documents electronically with authorized network users via the LAN, intranet, or Web. They provide a single access point, offer password-protected security, and feature an easy-to-track audit trail. Companies can use Web-based online storage for fast, low-risk storage that requires minimal hardware installation, software, and maintenance investment.

**2. Nearline** storage primarily uses optical discs or magnetic tapes (usually CDs, DVDs, or DLTs) to store documents, typically on site in a jukebox.

These discs and tapes are compatible with most computer platforms (e.g., Windows, Novell, Linux, and Macintosh). The innovative data compression technology of DVDs enables SMBs to store thousands of indexed documents on a single disc that can be shared electronically via a jukebox containing hundreds of discs.

Nearline storage is the most effective method of storing archive documents — 180 days to about seven years in their lifecycle. Unfortunately, nearline storage equipment can be expensive. Plus, nearline storage requires mechanical intervention, which prohibits users from retrieving documents as fast as they can with online storage. With the proliferation of online storage options that can cost-effectively store virtually any type of documents, nearline storage will eventually be used to store only infrequently accessed documents. Once the documents' lifecycle is complete, documents stored on nearline media should be moved to offline storage.

**3. Farline**, like nearline storage, uses CDs, DVDs, and DLTs to store electronic images. Unfortunately, farline storage requires human intervention to file, locate, and insert the media which makes the process time-consuming and error-prone. Farline storage is typically used to store documents that are infrequently accessed — those that are more than seven years old. Because discs are often misplaced and can be discarded or lost, this storage method simply allows too many variables that can hinder consistency for it to be a viable, cost-effective storage option.

**4. Offline** storage is used for an organization's most infrequently accessed documents. These documents would typically be stored on standalone CDs or DVDs with no connection between the documents and the document management system. All retrieval of documents would be performed manually, which significantly increases the potential for errors. However, a well-designed offline storage system would include a searchable database for document retrieval on each CD or DVD. When DVD standards are in place, DVDs will make the use of microfilm for long-term records storage virtually obsolete.

### Paper vs. electronic storage

There are two predominant practices for storing documents — paper and electronic storage. Even though most companies create and use a mix of paper and electronic documents each day, closer examination reveals several compelling motivators that may influence how they should be stored.

### The problem with paper

Paper isn't going away. People are familiar with paper. It remains the standard for invoices, tax records, account receivables, payroll, marketing communications, and more. It requires minimal capital investment. And, at first glance, storing it seems easy and affordable. These are powerful benefits, especially for SMBs that lack the internal resources and IT support for electronic document storage technology.

Unfortunately, paper accumulates quickly in an office environment. And with it comes a barrage of inefficiencies that can hinder workflow and productivity. These include:

- **Low ease of use.** Storing paper documents is a labor-intensive chore. Generally, it requires labeling, sorting, indexing, stapling, and placement into folders before files can be secured in a cabinet. All this legwork helps make the files easier to find, but the system is still fraught with risk, including misplaced or lost files caused by human error. Plus, it takes time to search through thousands of paper files. In fact, many document management experts estimate that a typical professional in an office environment can waste up to 500 hours per year searching for documents.
- **High potential for error.** A lot of things have to go right for a paper document to be filed correctly. But it takes only one mistake to lose a file indefinitely. Even if a file is archived correctly, there is no guarantee it will stay there. Often, retrieved documents are refiled in an incorrect location or left unattended on a desk somewhere in the office.
- **Lack of security and accountability.** Everyone has access to the file cabinets in an office. Yet everyone does not have the same level of experience with the filing system, nor the same degree of accountability. There are no audit trails to track documents and limited security provisions to protect sensitive information.
- **Outsourcing.** SMBs with limited resources and real estate often rely on outsourcing services for their document storage needs. Although outsourcing is an affordable option for document archiving, document retrieval is significantly more expensive. Most services charge about five times more to retrieve a box of documents than to store the same box.
- **No redundancy or disaster relief.** Paper documents are vulnerable to fire, flood, and theft. When a paper document is lost or damaged, it is gone forever.

### The advantages of electronic storage systems

Digital document imaging technology enables SMBs (and departments in large organizations) to convert paper documents to electronic image files for convenient storage. A wide range of electronic storage solutions — including automated storage and retrieval systems, paper-to-digital uploading applications, Web-based service providers and applications, and network scanners — can be incorporated into virtually any network. Although electronic document storage requires a modest capital investment, it can help reduce manual labor and operating costs immediately.

The advantages of electronic storage systems include:

- **High productivity.** An automated electronic storage system streamlines document workflow. Users can archive and retrieve digital documents without ever leaving their desks and multiple users can access the same files at the same time. The files can also be shared electronically with colleagues and clients across the network or through the Web. Sharing documents via the Web enables network users, as well as public users in some cases, to retrieve and view documents instantly via a Web browser.
- **Easy to use.** Today's electronic storage systems enable users to store and retrieve documents in seconds with the click of a mouse. With minimal training, users can begin converting, indexing, and importing documents. Flexible indexing capability enables users to index multiple documents simultaneously to save time. With a properly designed system, these index values provide quick, efficient retrieval of stored documents. As a secondary method to locate documents, a user could retrieve documents that have been improperly indexed via full text search.
- **No errors, no lost files.** It is virtually impossible to lose a file with an electronic document system. An electronic document is never removed — it is viewed — therefore, it cannot be misplaced. A properly designed system also features built-in redundant data storage to protect your organization against catastrophe. For additional security, you can secure your documents with a backup server placed offsite or with backup storage.
- **Reliable access control and security.** Electronic storage systems offer exceptional flexibility and access control to safeguard sensitive documents. Security controls can be configured to restrict access for groups and individuals at the folder or document level. Digital storage systems also enable system administrators to control what actions (edit, copy, delete, print, email, etc.) specific users can perform on specific folders and documents.
- **Minimal real estate required.** Many SMBs do not have the real estate to accommodate bulky file cabinets filled with paper files. Electronic storage systems can store millions of pages without requiring any physical storage space.

# Improving Document Storage for Your Organization

The transition to the “paperless office” has begun. Although it is currently more of an ideal than an actual occurrence, organizations are realizing improved availability, accuracy, and security of information by minimizing their dependence on paper throughout the enterprise.

Most SMBs and department-level offices incorporate a mix of paper and storage methods in their current workflow. Savvy executives, however, are beginning to implement new strategies that minimize their reliance on paper and position the organization to pursue the paperless office. Fortunately, there are many available technology options that can help ease an organization’s transition from paper to electronic storage.

### Managing the enterprise

Enterprise content management (ECM) and electronic document management (EDM) are two software-based technologies that can manage the entire document lifecycle. ECM and EDM systems provide data storage, document archiving, and retrieval across the enterprise, making these technologies popular choices for global organizations.

ECM systems store information. They capture, store, retrieve, and distribute active digital files in collaborative environments that require immediate access to information. These information management systems can consolidate email, transactional data, and other unstructured enterprise content into one centralized system to help ensure legal and regulatory compliance, business efficiency, enterprise-wide knowledge sharing, and streamlined workflow.

EDM systems store images of documents. They enable enterprise users to create and manage electronic documents that can be viewed, searched, distributed, or printed from virtually any network computer. EDM technology incorporates document imaging to capture paper documents and convert them to standardized electronic file formats that can be stored in the system. Because EDM systems manage primarily archived document files, documents retain their original look and feel, complete with text, graphics, photos, and color.

### Alliance Programs

To help customers make a smooth transition to advanced document management, some leading solution providers have created strategic partnerships with ECM/EDM organizations. These alliances help providers expand their capabilities to more effectively solve their customers’ specific document or content management challenges. Many companies lack sufficient IT resources to manage complex document workflow internally. Alliance programs offer these companies options that can foster integration and improve business processes. For example, an MFP user can scan hardcopy documents directly to their existing ECM system and index the documents from a single access point.

### Will ECM and EDM work for you?

Few SMBs have the resources to implement an ECM or EDM system. These systems use software-based architecture to manage every stage of the document lifecycle, and require a significant initial investment. They also involve significant IT support, which severely tax human resources. Implementation alone can take six months or more to complete.

### Affordable alternatives

There are many affordable, alternative systems that can serve the specific business needs of SMBs and department-level offices. This white paper will examine two viable, cost-effective options — a self-contained database appliance and a Web-based document repository. Both can immediately streamline workflow and provide exceptional management with fewer IT requirements for a fraction of the cost of enterprise-level software.

### Network Office Appliances (NOAs)

An NOA is an affordable, automated, self-contained database appliance that can be used in tandem with a digital MFP or other networked peripheral to capture, scan, store, and track paper documents. This electronic filing database requires very little IT support, yet it can store and index large volumes (millions of pages) of documents. In fact, it can usually be implemented in as few as two days.

NOAs offer several benefits for the SMB environment:

- **Compatible with your existing network.** Because it's built on industry-standard protocols, all you need to do is give the NOA an IP address and direct your peripherals to it for a seamless, automated electronic document filing solution.
- **Easy to use.** An NOA enables document searches, retrievals, and downloads directly from a Web browser with the click of the mouse.
- **Document security.** Only authorized users can access stored documents. Once logged in, users are allowed to view only the documents that they have permission to retrieve.
- **Disaster prevention/recovery.** Some NOAs capture documents and automatically back them up to online storage media. A second backup server placed offsite offers protection from an on-site disaster and is an ideal receptacle for redundant data storage. Many NOAs also feature a data replication mode (i.e.- dual NOAs) for replicating documents in the event of equipment failure. Plus, with database mirroring, data is automatically stored on two different drives in the same NOA for additional data security.



*A network office appliance (NOA) works with your existing peripherals to capture and archive any file or document type.*

- **Personalized retrieval.** A valid user name and password is required to access document collections based upon hierarchical folders set up by the administrator. Users can also personalize view settings and custom search criteria for easier retrieval.
- **Easy, remote access.** Multiple NOAs can be networked to give remote offices and separate corporate workgroups access to local and remote files for easy document sharing. Data can be replicated and directed to an additional NOA for functional redundancy and 24/7 uptime.

### Application service provider (ASP) or “on-demand service”

These Web-based repositories are built on ECM/EDM platforms and enable users in SMB environments to scan documents at an MFP and transmit them to a secure Web site where documents are stored in individual folders. Authorized users can log on to the site and review stored documents from any Web-connected PC.

The advantages of on-demand services include:

- **Document access.** Documents are available anytime, anywhere for managing, sharing, and collaborating. For example, on-demand services enable members of a globally distributed team to review and edit the same document from multiple locations. Each member simply opens a Web browser, logs on to the site, and then accesses the file.
- **Affordability.** The services for Web-based electronic repositories are outsourced for a value-based fee, which eliminates initial capital investments in hardware, software, and IT resources. You can also eliminate mailing costs, reduce fax traffic, and shorten review time for documents being reviewed in multiple offices.
- **Security and disaster protection.** Most ASPs are hosted at data centers which provide protection from natural disasters and ensure document integrity. Document access is password-protected and data transmission can be encrypted. Plus, a verifiable audit trail identifies individuals who have accessed files and identifies what information has been accessed.
- **Reliable access control.** An on-demand service allows your on-site network administrators to control individual access to documents and the actions that users can perform.
- **Collaborative environment.** Some ASPs enable authorized network users to check documents out, lock them for editing, and automatically track versions when checked back in. An on-demand service can also provide a verifiable audit trail for shared documents which were accessed both inside and outside the organization.

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## Choosing the Right Storage Solution

Organizations that lack a properly designed electronic document storage system will eventually encounter poor workflow and low productivity. Every idle day directly affects the bottom line as inefficiencies sweep through the organization. Resources are taxed, information is lost, document integrity is compromised, and customer service may be adversely affected. In some cases, employees may be spending as much as half the workday looking for documents that don't exist.

Advances in storage technology provide many innovative and affordable options that can help SMBs improve productivity and reduce operating expenses. The key is selecting the solution that best fits the organization's specific needs.

### Assess document management requirements

A comprehensive assessment conducted by your document management partner can help you determine what document storage solution is best for your business. It should measure document-related assets, activities, processes, and accrued costs. Your partner should base any recommendations on your organizational goals, current IT infrastructure, and specific business requirements.

Here are some criteria companies should consider as they evaluate their document storage options:

**Business needs.** Executives know their organization better than anyone. So they are the experts when it comes to assessing the company's specific business needs. The answers to the following questions will steer them to their ideal document storage solution:

- How much data will be stored? What is the retention schedule for stored documents? How often will the documents be accessed? What will the ratio be between archived documents and open transactions?
- What is the percentage of documents that will be shared with multiple employees throughout the organization? How many of these documents require edits and multiple revisions from several individuals? Will multiple versions need to be tracked?
- Is there a need to track access to documents containing sensitive information? What is the percentage of documents that contain sensitive information? Who will be accountable for each stored document?  
Who will monitor document traffic?
- How many individuals would be involved in the approval process? How are documents distributed? How is approval communicated?

**Staffing resources.** SMBs have limited resources, and many departments in larger organizations are being asked to do more with less. As a result, organizations do not have enough employees to adequately file, search, and retrieve documents manually. Companies should consider:

- How are documents currently stored? Where are the inefficiencies? What index criteria is needed?
- How many employees are in the organization? How many locations are there?
- How much training will be required? How much will training cost? Who will conduct the training?

**IT environment.** IT infrastructure and personnel ultimately determine what type of document storage system can be implemented. Because resources vary greatly from office to office, IT must answer the following questions:

- What in-house IT support capabilities will be available?
- How soon will an upgraded or new storage system need to be operational?
- How many network devices (number of workstations and points of access) are in the organization?
- Is there sufficient network bandwidth to support an electronic storage system?

**Short-term costs.** Whether it's an expensive ECM or EDM system, an NOA, or a fee-based ASP service, companies will need to consider ongoing document storage costs.

- What will the initial investment be?
- How much will it cost to adequately maintain and manage the system?
- Are additional service and support employees are needed?
- What level of IT expertise is required?

**Long-term costs.** Document storage requires capital investment. Fortunately it's much more palatable when you consider the inefficiency and subsequent risks with paper storage, as well as the long-term workflow and productivity gains you can achieve.

- How much storage space is required today? How much storage space will be required in the future?
- What investment protection measures are in place?
- Do the soft cost benefits (security, accountability, and redundancy) justify the capital investment?
- *What are your documents worth?*

### **Partner with a document management expert**

Any effective document storage strategy begins with a realistic plan predicated on actual metrics from your organization. For this reason, it is imperative that a company choose a knowledgeable, experienced document management partner that can analyze document use in the organization and help them make the most of staffing, IT, and financial resources. A partner should conduct an initial analysis, and manage installation, training, support, and ongoing maintenance. Plus, it is important that the partner has a documented history of success with document management systems.

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## Conclusion

Electronic document storage solutions are less expensive, more secure, easier to use, and more reliable than traditional paper storage methods. Most important, they provide instant access to critical information, which enables employees to be more productive.

By capturing documents directly at their source, electronic document storage solutions — including network office appliances and Web-based repositories — enable businesses to reduce the manual touchpoints that cause workflow inefficiencies. Plus, these electronic storage technologies can be incorporated into virtually any network for a modest capital investment.

The first step toward implementation of an electronic document management system is to conduct an assessment of document processes within the business. For this reason, it is imperative that businesses choose a knowledgeable, experienced document management partner that can analyze document use in the organization and help them make the most of their staffing, IT, and financial resources.

Always remember the key question — what are your documents worth?

### About the author

Kevin Goldsberry has more than 27 years of experience in the office equipment industry. His tenure includes nine years as a field technician, nine years as a technical trainer, four years as an engineer, four years as an Applications Marketing Manager for Scanning Solutions, and most recently, Global Sales Connectivity Consultant for Ricoh University. He holds MCSE (Microsoft® Certified Systems Engineer), CNA, CDIA+, A+, and Network+ certifications.

