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Document Management

Reference Guide



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Document Management

Reference Guide

What is a CDW Reference Guide?

At CDW, we're committed to getting you everything you need to make the right purchasing decisions — from products and services to information about the latest technology. Our Reference Guides are designed to provide you with an in-depth look at topics that relate directly to the IT challenges you face. Consider them an extension of your account manager's knowledge and expertise, to help your company succeed. We hope you find this guide to be a useful resource.

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Chapter 1

Introduction to Document Management in Business

IN THIS CHAPTER:

- Paper Use Grows
- Motivators and Roles in Business
- Pain Points and Fresh Capabilities
- Legal Compliance
- Benefits of Content Management
- Planning the Workflow

Being efficient is a never-ending process. Companies are always striving to increase efficiency in operations while minimizing process defects and improving overall performance. In addition to the environmental benefits and cost reductions associated with moving to a paperless environment, going paperless decreases the time involved in nearly every aspect of traditional document processing.

Just as it is generally understood that streamlining and consolidating servers and infrastructure will maximize data center utilization and enable businesses to more quickly respond to changing IT needs, a Document Management System (DMS) offers a solution to paper-intensive operations that provides similar economies of scale.

The last U.S. census reported that there are more than 285 million Americans. When you consider that each of these Americans has a birth certificate, that most adults have a job where they receive a paycheck and invest in a 401K plan, and that a large number of Americans are enrolled in a health insurance plan, you can begin to grasp the enormous volume of documents that U.S. businesses have to manage. Consider that many of these people also have:

- Checking accounts — Checks are paper that require processing.
- Children — Registering them for classes, extracurricular activities and much more.
- Social networks — Gym memberships, club memberships, ticket purchases, flights — all generate paper.
- Homes — Mortgages require a large amount of paper including deed transfers, loan documentation, homeowner's association memberships, service fees and so on.

- Vehicles — Complete with title, insurance, registration and a great deal of other paperwork depending on the type of vehicle and how it is used.

Paper Use Grows

The depth and breadth of paper use in our society is overwhelming. The more society grows, the more complicated it becomes to gain access to appropriate information at the appropriate time, and so the process slows. Conversely, the public's expectations for quick, immediate access to information continue to increase.

Regardless of whether you call the person whose documents you're handling employee or customer, people desire their information to be maintained confidentially, with secured integrity and availability when needed. These three tenants of information protection are difficult, at best, to maintain in a paper-only environment. This further drives the need for a DMS.

Document management systems come in many shapes and sizes, from systems designed to archive medium-size office documents to full-scale enterprise solutions. They all serve the same goal: to provide a systematic method for creating, categorizing, storing, locating and retrieving documents. An effective DMS facilitates the sharing and secure distribution of documents and helps reduce the costs of distribution and filing.

A DMS should also improve and protect access to information, comply with government regulations and improve operational efficiencies. Whether your company is a medium-size operation or a large retail chain, a DMS can meet demands to efficiently organize

and manage the flow of information both internally and externally, and may substantially reduce the cost of operations.

This section will touch on some of the additional key motivators beyond the need for greater efficiency that are driving the adoption of a DMS across the business sector, and examine some of the roles of such systems. The remainder of this guide will explore different processes and technology components that comprise a DMS to help you make an informed purchasing decision.

Motivators and Roles in Business

Technological innovation always starts with an unfulfilled need. Commercial businesses were the first to adopt document management systems on a large scale because of a growing need to capture and organize multitudes of printed paper documents as electronic documents. Document management systems developed to offer the most efficient way to do it at a greater, more effective economy of scale. When you consider the vast footprint paper has in the commercial sector, the significant benefits of consolidation and centralized control of document management systems become immensely clear.

Pain Points and Fresh Capabilities

As the business environment becomes increasingly digitized, many transactions that involved the manual processing of paper are transitioning to the digital realm. Ironically, this greater efficiency has led to even greater documentation in the business world. To keep pace, companies are increasingly turning to a DMS to facilitate the capture of printed pages, electronic documents and multimedia content — the lifeblood of business.

No matter the size of the corporation, many of the challenges confronted in the document management process are similar:

- The volume of paper, electronic documents and multimedia content is greater than originally anticipated.
- Content management systems and processes are often unregulated and ad hoc.
- Legal and regulatory compliance concerns complicate the demands on the storage infrastructure.
- Balancing IT infrastructure efficiency metrics with the size, scope and regulatory needs of the DMS.



While the digitization of paper processes is generating more documents and information to track and manage, it is also proving to be a boon for most companies. From a marketing point of view, document digitization offers endless new avenues and opportunities to understand the desires and preferences of customers by comparing, contrasting and correlating gathered customer information to offer the best product or service to that customer.

For example, if a corporation wants to know how many of its customers wrote a complaint letter in 2006, this task would be a time-consuming hassle in the traditional paper environment. When entered into a DMS, however, searching customer correspondence for key words such as complaint or the product name during a certain time period (01 January 2006 – 31 December 2006) is not only achievable but nearly instantaneous.

Legal Compliance

The prior example not only reveals how easily a search can be conducted, but also suggests the ease with which another major motivator in the move to a DMS, legal compliance, can be managed. Regulatory and legal compliance concerns — such as those presented by the Sarbanes-Oxley Act, the Gramm-Leach-Bliley Act, the Basel II Accord and the Health Insurance Portability and Accountability Act of 1996 (HIPAA) — have pressured corporations to more stringently manage documentation throughout the enterprise.

Government legislation, such as Sarbanes-Oxley, has forced businesses to take a closer look at how they monitor, supervise and retain documents, e-mails, instant messages and other electronic records.

When called upon, companies must produce records supporting their compliance with the various laws. It's a similar process to a financial audit, where receipts, procurement documents, sales documents and so on need to be gathered. These are records that nearly everyone is accustomed to gathering and are easily classifiable as financial records and stored in systems specifically designed to house financial records.

Information relating to customer privacy, however, may be disclosed through a number of different media beyond paper, such as e-mail and instant messages. No matter the format, this information must be retained, and it must be kept secure. E-mail and instant messaging conversations are already in a digital format, so converting paper documents into a digital form provides businesses with a means to centrally manage all documents relating to a particular regulatory compliance need. And a DMS does so with enough longevity for long-term retention and in a way that keeps them secure.

Benefits of Content Management

Content management is a set of processes and technologies that support the lifecycle of digital information. This digital information is often referred to as content or, to be more precise, digital content. Digital content may take the form of text, such as documents; multimedia files, such as audio or video files; or any other file type that follows a content lifecycle that requires management.

Document management systems come in many different forms, from small, open-source systems to large-scale enterprise systems. Benefits of using a DMS include:

- Relief of paperwork burdens through improved efficiency
- Minimization of the possibility of lost information and liability
- Increased productivity (which reduces costs)
- Sharing of information among many users simultaneously
- Improvement of service and response to customers

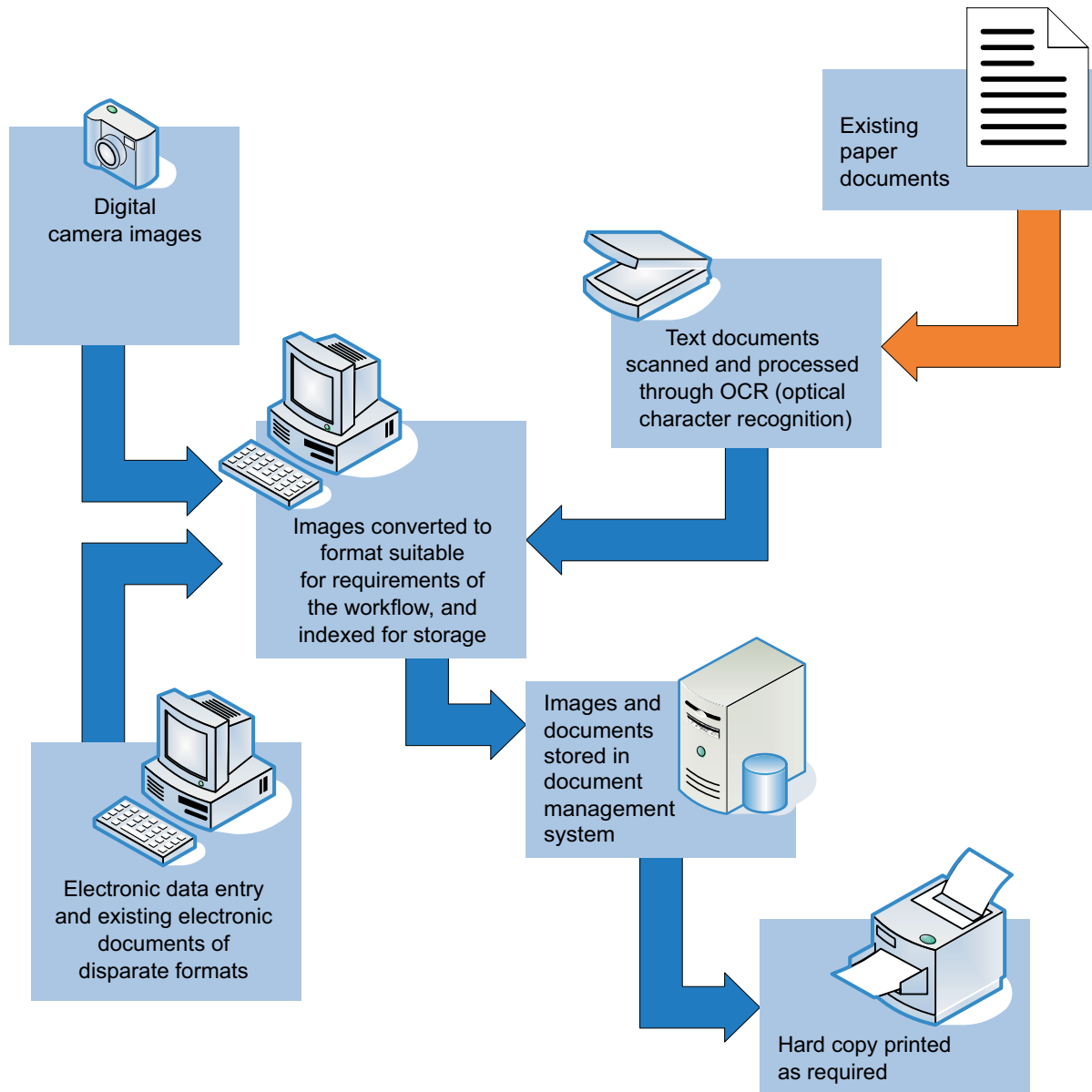
All DMS systems are not created equal, so you'll want to be discerning when determining the right DMS solution for your company. When chosen correctly, a sound DMS will ease continuity and disaster-recovery planning efforts, and help your business maintain compliance and avoid penalties.

Food for Thought

- The average document gets copied 9 times.
- It costs an average of \$20 in labor to file a document, \$120 in labor to find a misfiled document and \$220 in labor to reproduce a lost document.
- 7.5 percent of all documents get lost, 3 percent of the remainder get misfiled.
- Staff spend 5 to 15 percent of their time reading information and up to 50 percent of their time looking for it.
- There are over 4 trillion paper documents in the U.S. alone — growing at a rate of 22 percent per year.
- The average worker spends 13 hours a year searching for lost documents.

(Courtesy of PricewaterhouseCoopers)

DOCUMENT MANAGEMENT WORKFLOW



Planning the Workflow

While the document management needs of your particular department may be unique, the workflow of document management follows a fairly basic path, as illustrated on the page to the left.

When planning your workflow, there are a variety of factors that should be addressed in order to make the process run as smoothly as possible. These include:

- **File format** — The format you choose should be both convenient for your current needs, and practical and sturdy for your future needs. Smooth integration with other forms and data used by the business should also be considered. (This is discussed in further depth in Chapter 2.)
- **Security policies** — Security of the documents encompasses both accessibility — who can or can't open it — and protection against any editing. (This is discussed in further depth in Chapter 3.)
- **Reviews, markups and approvals** — If the documents need to go through an approval process, participation of any stakeholders must be managed for optimal efficiency. Also, find out if your business supports the use of a digital signature in lieu of a handwritten signature.
- **Vertical workflows** — Depending on the size of the firm, you may have other departments (such as finance, legal or creative) that need to be integrated, or even have workflows of their own that must be aligned. ■

Quick ROI Calculation

- An organization generates or receives 100 important paper documents per day that must be filed.
- 100 documents x 6 minutes to file each one = 600 minutes filing per day.
- 600 minutes per day = 10 work-hours per day.
- 10 work-hours per day x \$5 per hour (inclusive of benefits and related costs) = \$150 per day.
- \$150 per day x 250 working days per year = \$37,500 per year.

(Courtesy of PricewaterhouseCoopers)



CDW can assist your business in researching and designing the appropriate document management system.

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Meet Steve

Enterprise Content Management Specialist

Steve has been a CDW specialist since January 2005, and brings eight years total experience in designing paperless environments and content management solutions to the CDW account management team. He has also earned CDIA+ certification from CompTIA and ECM-P certification from AIIM. Steve will help you develop document, content and digital asset management solutions to improve business process automation, cut customer inquiry response times, reduce paper storage and postage costs, and empower your company to meet compliance standards for retaining records.



Turn piles of paperwork into usable electronic data with a document management system from CDW.

Today, in spite of all the technology, companies still have massive amounts of information that exist as individual pieces of paper and photographs. Sharing this information — and reducing the cost and complexity of managing it — is difficult because the various reports, proposals, brochures and photographs are all in different formats. But by converting these paper documents and photos into a single format — a high-quality PDF — you can simplify both the sharing and the management of the information.

CDW can help you manage your paper documents.

Your CDW account manager will work with a document management specialist and your IT department to ensure that your solution integrates seamlessly with your current technology. Technology is only as good as the experts behind it. That's because it takes real people to solve real business problems. And at CDW, we take your IT issues seriously — bringing you the best technology, the best people and the best expertise the industry has to offer.

Call your CDW account manager or visit us online at CDW.com/documentmanagement to find out more about what an effective document management system can do for your business.



Chapter 2

Document Capture

IN THIS CHAPTER:

- Hardware Capture
- Software Capture
- Software Capture Formats
- Transmission

Most document management begins with the gathering of information in the form of a document. A document may be an actual physical piece of paper that is electronically captured or a form that is filled out through electronic means.

The most common method of document capture is via a piece of equipment that captures physical documents, such as a document scanner. This is called a hardware capture. The second most common method is from a customer filling out an electronic form on a Web site, which is a form of software capture.

Hardware Capture

The use of hardware to capture documents is quite common, and the equipment used typically varies only in the scale at which documents need to be captured. The generic term *document scanner* is used to refer to the wide array of document imaging devices available, from small-department flatbed scanners to larger paper-fed scanners that are capable of handling dozens or even hundreds of documents per minute.

Multifunction devices that combine the roles of printer, copier, scanner and fax into one device are useful in small-department settings, such as a personnel office or customer-service department, that don't handle a large volume of documents and can most benefit from a small, relatively inexpensive document-capture solution.

Document Scanners

There are a wide variety of document scanners on the market today that are ideally suited for document capture and offer many

features. When deciding upon a document scanner, take into account the following considerations:

- **Optical resolution** — The optical resolution is a measure of the detail level at which a scanner can capture a document in pixels. The higher the optical resolution, the more detailed the document image will be when it's captured. Optical resolution is measured in dots per inch (dpi). Three hundred dpi has been the standard in optical resolution for documents for some time, but most scanners today are capable of greatly exceeding this resolution.
- **Interpolated resolution** — The interpolated resolution is a measure of the scanner software's ability to enhance an image and increase the resolution by guessing at the color of a dot in between dots of a known color. This is generally only a factor where images are concerned; the relationship being the higher the interpolated resolution, the smoother the image will appear when enlarged.
- **Color depth** — The color depth is the number of pieces of information (bits) that can be captured for each pixel. If your primary focus is the capture of black-and-white documents, color depth is not a decision-swayer factor. It would be uncommon today to find a document scanner that wasn't at least functioning at 24-bit. When capturing photographs or documents with highly detailed color graphics, higher bit color depth is desired.
- **Simplex vs. duplex** — As their names suggest, a simplex scanner can scan only one side of a document, and a duplex scanner is capable of scanning both sides of a document in a single pass. In today's financial world, where digital images of checks are just

as legal tender as the original checks, financial institutions use high-speed duplex scanners to capture check items as they are processed.

- **Speed** — Measured in pages per minute (ppm) or images per minute (ipm), speed refers to the rate at which scanners can capture data. Respectively, ppm is used as a measure for simplex scanning and ipm is used as a measure for duplex scanning. If speed is your primary requirement, large-scale document capture devices such as the Kodak i840 Color Duplex Scanner, which offers 160 ppm in simplex mode and 320 ipm in duplex, can make short work of tall stacks of documents.
- **Flatbed vs. sheet-fed vs. multifunction** — Flatbed scanners, such as the Cannon CanoScan LiDE 70, operate like a very basic copier, with only a flat glass surface and a lid to cover the image for scanning. Flatbeds are typically used as a means of document capture in environments where very few documents are captured or the documents being captured are items that cannot be sheet fed, such as capturing a few pages out of a book.

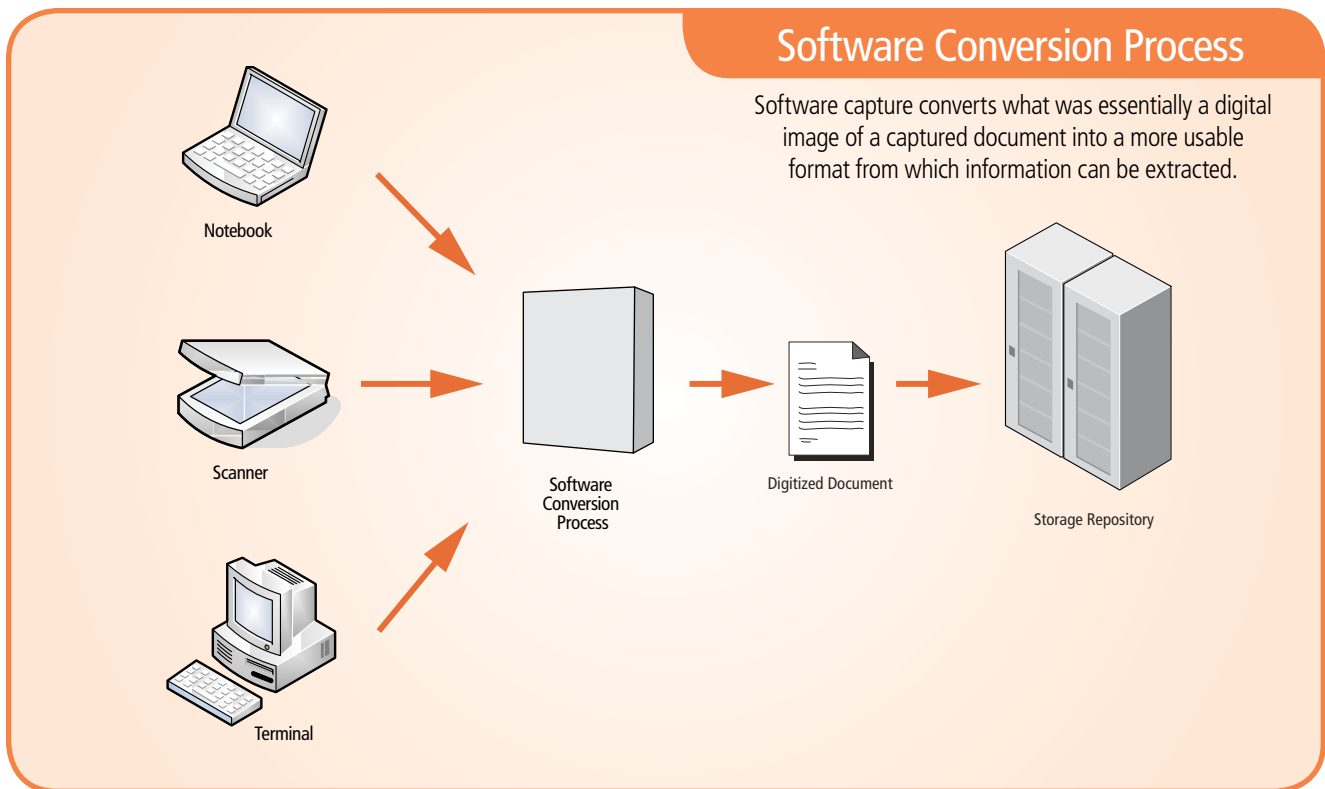
Sheet-fed scanners such as the Xerox DocuMate 250 can offer higher volume and operate like copiers with an Automatic Document Feeder (ADF) that can be filled with the original documents and then scanned in order as fed from the ADF to the scanning surface.

The key selling point on sheet-fed scanners is the ppm it's capable

of scanning. This is important, but don't neglect to look at other important decision items such as resolution and color depth. A variation on the use of a sheet-fed scanner is the portable sheet-fed scanner. Devices like the Visioneer Roadwarrior scanner offer portable scanning solutions for notebook users on the go.

Multifunction devices may come with scanners that are flatbed, sheet-fed or both, and combine the secondary and tertiary functions of printing and faxing. Generally, the maximum size documents that can be handled are standard paper sizes, such as letter (8.5 inches by 11 inches) and legal (8.5 inches by 14 inches).

- **Duty Cycle** — Sometimes referred to as a Daily Duty Cycle (DDC), this is a measure of how many scans a scanner can process in a day. This factor is particularly important in large-scale document scanning solutions because manufacturers often design scanners to capture this data internally, and exceeding the Duty Cycle can mean voiding a warranty. In procurement, the DDC is a good way to determine how many of a particular model you should purchase to meet the needs of your document capture environment.
- **Interface** — In many office environments, the Universal Serial Bus (USB) interface dominates the market. This is because no additional hardware is required (most PCs have a USB port). But USB can handle only relatively slow speeds, document scans of approximately 20 ppm. In larger, faster environments other



interfaces, such as the Small Computer Systems Interface (SCSI), may be warranted. SCSI is not only faster than USB, but can also be buffered using SCSI hardware, meaning that the scanner can be used at maximum speed to the interface at all times.

A few variables specific to multifunction devices that should be taken into account are the features of the printer, copier and fax functions of the device.

Printer

- **Type of printer** — Choosing between laser printing and inkjet printing is a primary decision. Laser printers are typically more expensive but have a lower cost per print. So in large volumes of printing, laser is the more cost-effective option. Inkjet printers are less expensive, but the cost per print is typically higher than laser.
- **Cost per page** — Many manufacturers list an approximate cost per page, which takes into account the paper and ink or toner that is used.
- **Print speed** — Measured in ppm, this refers to the speed at which the device prints. Note that printers usually print noncolor documents faster, so check the ppm speed for both color and grayscale documents.
- **Print quality** — Measured in dpi. As with digital capture, this is the resolution at which the printed document will be rendered on paper.

Copier

- **Copy speed** — Measured in copies per minute (cpm), copy speed is the rate at which documents can be copied.
- **Resolution** — Refers to the resolution of copied documents in dpi.
- **Multicopying/stack/sort** — If the device has an ADF, the multicopying, stack and sort specifications will show how many documents the device can make per page loaded in the ADF and whether it will stack or sort those copies.
- **Enlargement/reduction ratio** — Enlargement permits documents to be made larger for printing. Reduction allows the user to compress two or four pages into a single page.

Fax

- **Transmission speed** — 33.6Kbps is the standard transmission speed for most fax devices.
- **Error Correction Mode (ECM)** — ECM detects errors during fax transmission and will resend any pages that had an error. This feature must be on both the sending and receiving fax to function.
- **Color or black and white** — If color faxes are important, you will need to ensure that your fax machine is capable of sending and

receiving color faxes.

- **Speed dial** — Take note of the number of speed dial numbers that can be stored in the device.
- **Dual access** — Allows the user to perform two actions on the machine at the same time, such as sending a fax and printing a document.
- **Broadcasting** — This refers to the ability to send a single fax to multiple numbers.
- **Fax forwarding** — This refers to the ability to send a fax that is received in memory to another device. If the device runs out of ink, is unable to print or sent to the wrong office, fax forwarding allows the user to send the fax to another machine.
- **PC faxing** — This refers to the ability to send faxes directly from the desktop.

Software Capture

One of the biggest document management concerns is that of usability. Beyond capture and storage, the documents that enter into the DMS are eventually going to be used by someone or at the very least indexed so that, should a need arise, the documents can be found.

As stated previously, documents enter into the DMS through one of two primary means — either as paper that is digitally captured through the use of hardware capture devices, or through software such as a form filled out on a Web site. Once a physical document has been captured, it is a digital document that can be stored, manipulated and managed through software.

Beyond the capture of documents through electronic means, software capture includes the process of converting the image of a document into a format that can be indexed, edited and used in electronic form. Many software applications on the market today enable software capturing of documents to make digitally imaged documents editable and usable.

Adobe Acrobat Capture 3.0

The predominant name in document management is Adobe. Its Portable Document Format (PDF) has become the de facto standard document format. Adobe Acrobat Capture 3.0 software is a professional production tool that teams with your scanner to convert volumes of paper documents into searchable PDF files. Features include Optical Character Recognition (OCR), which identifies printed characters and translates them into digital characters, advanced page and content recognition, and powerful cleanup tools.

There are two editions of Adobe Acrobat Capture:

- **Acrobat Capture Personal Edition:** Designed for Microsoft Windows or Mac environment, Acrobat Capture is a professional

production tool for turning paper-based information into high-quality knowledge documents optimized for electronic publication. A hardware dongle, a security device that authenticates a particular software program, allows conversion of as many as 20,000 searchable PDF pages. Additional dongle packs are available for purchase if more pages are needed.

- Acrobat Capture Cluster Edition: This software suite provides the same professional production features as the personal edition but is scalable for high-volume requirements, offers multiprocessor licensing and converts an unlimited number of pages.

Captiva Products

EMC software's Captiva QuickScan Pro (QSP) is a standalone, out-of-the-box imaging solution that provides capabilities for high-speed scanning, image enhancement, viewing, annotation, printing and storage. Its strengths include flexible job separation, bar code recognition (up to 30 bar codes per page) and usability.

In addition to being a standalone product, QSP can be easily integrated into a DMS, serving as a "scan module" that feeds

Resolution independent, PDF files contain a complete description including the text, fonts, images and graphics that can be resized and displayed on virtually any type of device.

scanned, cleaned-up images into the system. This flexibility makes it possible to streamline the incorporation of accurate, usable content into the overall document workflow.

Kofax Image Products

Kofax offers a variety of image products serving the needs of business organizations and software developers. Three of Kofax's main software capture solutions are:

- Kofax Ascent Capture — This product automates the capture of information from documents and forms in one software suite. Kofax Ascent Capture is available in a variety of forms, from the standard Ascent, which is a multipurpose suite, to software designed specifically to capture invoices (Ascent for Payables) or

healthcare forms (Ascent for Health Insurance).

- Kofax Capio — Provides document imaging and management capabilities for individual users. It is ideal for smaller departments, where document management volume is low. Capio includes Kofax VirtualReScan.
- Kofax VirtualReScan — VirtualReScan is a software capture technology from Kofax that automatically detects document problems, such as skew, upside-down capture and background pigment problems and corrects the document image.

Nuance Products

Nuance offers products that enable DMS users to convert, organize and share documents in various formats. OmniPage Professional enables end users to precisely and efficiently convert documents and forms into many popular office applications. This allows documents that are scanned to be made instantly available as Microsoft Office files or quickly formatted into PDF files and distributed through the enterprise. ScanSoft PaperPort Professional enables medium- to large-sized firms to organize, find and share their documents, including paper, PDF, application files and photographs.

Software Capture Formats

Documents can be captured and stored in a variety of formats, each with their own benefits. At the most basic level, document capture involves the digital imaging of documents into a digital format. A software capture may simply be a graphic image file, such as a photograph of a document, which is useful at a basic level if you ever need to recall and reprint a document, but does little for an organization that needs to work with the information contained within the document.

Software capture converts what was essentially a digital image of a captured document into a more usable format from which information can be extracted. Adobe PDF is one of the most popular formats, but a wide variety of document formats exist that can be leveraged at various points within an enterprise or organizational DMS.

Adobe PDF

Adobe PDFs are device independent, so they can be viewed on virtually any computer platform. Each PDF file includes a complete description including the text, fonts, images and graphics that compose the document. They are also resolution independent, so PDF documents can be easily resized and displayed on virtually any type of device.

Being resolution independent is an important quality because it allows the document to be accessible on many different kinds of devices at many different resolutions. This is important because it

allows people with visual impairments to scale documents to larger sizes without losing document quality.

Subsets of PDF have been or are being standardized under International Organization for Standardization (ISO) for several constituencies:

- PDF/A for archiving in corporate/government/library environments as ISO 19005 (work done in ISO 171)
- PDF/E for exchange of engineering drawings (work done in ISO 171)
- PDF/UA for universally accessible PDF files
- PDF/X for the printing and graphic arts as ISO 15930 (working in ISO TC130)

TIFF

The Tagged Image File Format (TIFF) is the standard image file format for document capture and, like PDF, is device independent. TIFF files can store multiple document pages within a single file, making them a better storage standard for digitally imaged documents than other graphics file formats designed specifically to handle images (such as Windows Bitmap files — BMPs). TIFF is an image format, which means that it's generally not editable by word processing applications.

Microsoft Suite

Microsoft Office applications (Word, Excel, PowerPoint) have an extremely large footprint within today's business offices and must be considered in the document management equation. Though usually just referred to as a Word, Excel or PowerPoint file, the Microsoft family of document formats consists of more than just the common file types most people equate to the applications.

Microsoft Office 2007 has recently introduced a new file format known as XML Paper Specification (XPS). XPS is designed to provide users with a consistent document appearance regardless of where and how the document is viewed, much like an open-source PDF system. XPS has the support of printing companies such as Canon, Epson, Hewlett-Packard, Ricoh and Xerox as well as many software and hardware companies.

Transmission

Once the documents have been digitally imaged and entered into the DMS, you might need to transmit the documents to other agencies or individuals that don't have direct access to the DMS. Many document management systems include features that easily allow for the export of documents from the DMS for transmission via fax, e-mail or other means.

When transmitting documents, there are a few key points that need consideration:

- Portability — It's important that the person receiving the document be able to access and use it without any special hardware or software configuration. Adobe PDF, TIFF and the newly introduced Microsoft XPS format are all standard document formats that can be accessed regardless of operating system (OS). The Adobe PDF format does require a PDF reader that is freely available at <http://www.adobe.com>.
- Security — When sending a sensitive document, it's important to protect the document from tampering. Both Adobe and Microsoft offer security features for their native documents that limit users' ability to edit or modify the document content.
- Compliance — Many compliance issues are raised in the transmission of documents. The Health Insurance Portability and Accountability Act (HIPAA), for example, sets forth policy on who may receive personal health-related information and, depending upon which compliance your business needs to adhere to, there may be requirements for auditing who received what information and when.

In addition to traditional e-mail and fax transmission, another kind of device has emerged to manage the transmission of documents. The HP Digital Sender looks a lot like a multifunction device, but is actually a bit more. This device will convert paper documents into digital information to be sent by e-mail. The documents are compressed and converted to PDF or TIFF files.

Once the transmission is completed, the information can be reformatted, edited, printed or even stored by the receiving party, and documents can be sent to different people in different locations at the same time. ■



CDW's Document Management Specialists can work with your account manager to implement a document management strategy that meets your unique needs.

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Enhance your operations.

Do it with a document management solution from CDW.

An effective document management system must accommodate every type of document that is part of your business's processes and procedures.

There are three primary methods of bringing files into a document management system:

- Scanning or imaging — for paper files
- Importing — for archiving such electronic documents as word-processing files, spreadsheets and faxes
- Conversion — for creating unalterable images of electronic documents

Batch processing of documents and forms is also recommended if high-volume processing is part of your operations — otherwise, imagine the utter inefficiency that would ensue were each document to be processed individually.

A full-featured document management system will allow files and records to be brought into the system in one batch to speed up your process. Once all the pages have been captured, the system should enable users to easily annotate, arrange or otherwise sort them to ›

FUJITSU



Fujitsu fi-6000NS

Color document network scanner

This scanner combines easy installation of a desktop scanner with the productivity of a network scanner. It allows you to scan to e-mail, network folder, network fax systems and searchable PDF.

- Scan speed: up to 25 ppm simplex, 50 ipm duplex
- Scan resolution: 600 dpi optical
- 50-page Automatic Document Feeder (ADF) with double-feed detection
- Accommodates embossed and hard card scanning
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meet the particular needs of your business. The system should also enable users to update or add index fields at a later date. If your business has multiple offices, your document management system should permit authorized users at all locations to capture and access documents as necessary. In this case, your system should allow for documents to be scanned into the system and transferred into the database at different times to alleviate network bottlenecks during peak traffic hours.

Major advancements in scanning technology have made paper document conversion fast, inexpensive and easy. CDW offers a wide variety of scanners to meet your conversion needs. And we have the software to help you manage your digital assets, too.

Call your CDW account manager today or visit us online at CDW.com to find the document management system that's right for your business.



Vioneer Patriot™ 680 Document Scanner

Departmental duplex flatbed scanner

The Vioneer Patriot™ 680 Document Scanner is a departmental flatbed scanner that can be programmed to automatically scan up to 99 different destinations and can be customized for each individual or workflow in your business.

- Scan speed: up to 40 ppm simplex, 80 ipm duplex
- Scan resolution: 600 x 1200 dpi optical
- 100-page ADF
- Includes OmniPage®, Kofax® VRS® Basic, WIA, TWAIN and Certified ISIS® drivers

\$1449.99 CDW 1014155

Vioneer NetScan 2000 USB scan server **\$321.99** CDW 994468



CALL FOR PRICING

Canon ScanFront 220P

Standalone color duplex network scanner

- Scan speed: up to 26 ppm simplex, 34 ipm duplex
- 50-sheet ADF
- Scan images directly to one or multiple shared PC folders, e-mail addresses, FTP servers and USB memory
- Easy operation with a built-in 8.5" color touch-screen monitor

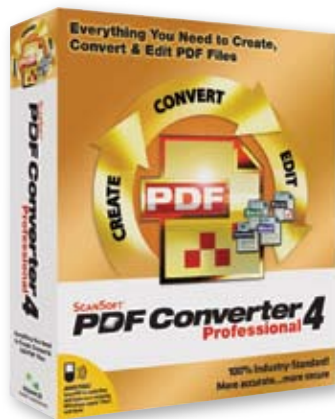
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A portrait of Mark Lacerra, a man with dark hair and a slight smile, wearing a dark red button-down shirt. The background is a blurred office setting.

Mark Lacerra
Director of Technology
Maier, Markey & Menashi LLP
White Plains, N.Y.

Piling Up Success Stories, Not Papers

Professional services firm deploys document-management system to achieve greater efficiency and better serve clients.

The paperless office: For more than a decade it's been considered the ultimate goal of corporate document-management initiatives. As companies wrestled with the proliferation of paper, the difficulty in finding and retrieving documents and the struggle to archive and store millions of paper-based records, document-management projects held the potential to make these laborious tasks a thing of the past.

One thing is clear, when companies embark on document digitization with a realistic and manageable set of goals — reducing paper processing, making information more accessible and cutting document storage costs — they are invariably successful.

Maier, Markey & Menashi LLP, White Plains, N.Y., is one such company. The White Plains, N.Y.-based professional services firm is using document management to slash the paper, time and labor involved in handling invoices and other documents for a major healthcare client.

The company's success is measured against some tried-and-true business principles, including an expectation that the document-management system would integrate seamlessly with other applications, thereby eliminating the need to input data or documents more than once.

Maier, Markey & Menashi also had defined financial objectives, namely that the system be dynamic and able to grow with the company, rather than having costs escalate as the company found new applications and uses for the technology.

“Document management is a value-added service offering that allows us to strengthen our client relationships,” says Mark Lacerra, director of technology for Maier, Markey & Menashi LLP. “It will have a dramatic impact on our core business processes.”

Client Focus

The nature of Maier, Markey & Menashi's business — accounting and auditing, taxation, human resources consulting, dialysis facility management and wealth management — mandates retaining several years of records for clients. This requirement was pushing the physical limits of the firm's onsite storage space as well as increasing the monthly cost for offsite storage.

Maier, Markey & Menashi's client whose application was first to leverage its document-management initiative is a large healthcare organization providing renal dialysis services.

“We assist them with accounting, tax compliance and consulting, medical billing and collections, and accounts payable management,” Lacerra explains. “As their organization continues to grow, so does the volume of paper that comes into our office on a daily basis. That was the primary reason we started evaluating various document-management solutions.”

Following significant research and analysis, Maier, Markey & Menashi selected a Web-based content management solution called FileBound from Marex Group Inc., based in Lincoln, Neb. The FileBound solution was selected because it most closely matched the

company's business imperatives, including integration with its MAS 2000 enterprise accounting system from Sage Software.

FileBound Features

As Lacerra explains, data is exported electronically without human intervention from MAS 200 and automatically imported into FileBound on a scheduled basis.

A user in accounts payable enters a batch of invoices to be processed in MAS 200. Once that metadata has been imported to FileBound and the invoices are scanned, a user can search for and locate the document in digital format via the FileBound Web site in seconds.

Lacerra notes that the application integrator provides essentially two main features: "screen scraping" of data from a third-party application into FileBound, or "buttons" which can be drawn onto virtually any application to activate FileBound document-management functions from within that application.

"In the past, only the paper record would have been kept in a file cabinet for a few months before being put into boxed storage," Lacerra explains. "The key benefit of FileBound is all of our paper documents will be digital. Search and retrieval time for any document is now seconds and not days."

Price Matters

Licensing costs were one of the key factors in Maier, Markey & Menashi's selection of FileBound software. Like many software platforms, some other document-management systems are priced according to client licenses: the more users of the system, the higher the licensing costs. Fundamentally, that model can work against the thinking around document-management initiatives.

Many companies will start document-management projects on a small scale, as Maier, Markey & Menashi did, then expand them out to capitalize on their successes. But this means that the cost goes up and can become quite unpredictable, potentially jeopardizing some of the cost savings that are being realized.

FileBound's model is significantly different, and the impact of its model is felt long beyond the initial purchase. For example, FileBound makes it easy for a customer to choose a phased approach by purchasing only the base product (Archive) or bundling all of FileBound's four components (Archive, Forms, Workflow and Application Integration) together from the outset of a project.

"The FileBound bundled pricing model had all these key components like workflow and application integration built in from the start," Lacerra says. "There were no other hidden costs or surprises."

The FileBound pricing structure is based on the number of documents

stored, with milestones such as two-million or five-million document images, notes Steve Crump, an enterprise document-management specialist for CDW and primary point of contact for Maier, Markey & Menashi.

"FileBound always licenses for unlimited users so when someone like Maier, Markey & Menashi comes to me and has a specific need, I talk to that customer about future needs," Crump explains. "It's pretty traditional for one department to have some success, and then other departments want to replicate it."

Consultative Relationship

As part of its service to customers, CDW helps ballpark the number of documents a company creates and has built up over time and how much electronic storage capacity it's likely to use — that will help control its costs when deploying Filebound software.

Estimates indicate there are 12,500 sheets of paper in a standard four-drawer filing cabinet. CDW can also factor in variables, such as the number of invoices a company generates per month from its CRM (Customer Relationship Management) system, Crump explains. That's a strong indicator of the consultative role CDW plays with its customers.

While CDW is Maier, Markey & Menashi's preferred vendor for hardware and software products, it also played a strategic role in the selection of Marex Group and the FileBound system.

"In the document-management space there are a lot of vendors — small, medium and large — and a lot of feature sets offered," Lacerra notes. "Steve [Crump] was a huge help to us in cutting down the time, narrowing down the options and focusing in on one or two vendors that would be the best fit."

Crump's recommendation of Filebound has been borne out by the performance of the software.

"FileBound was fully operational in our production environment in two days," Lacerra says. "The MAS 200-FileBound integration took approximately one week to implement, which gave us the framework needed to accelerate similar document-imaging projects. It was amazing how rapidly we were able to deploy this product to our accounting department."

Crump maintains that one of the key value-adds that CDW provided in the relationship was acting as the direct interface to Maier, Markey & Menashi, while representing Marex Group's FileBound system.

"You're dealing directly with me, and I'm an extension of the FileBound sales team," Crump says. "Then, after you have a deal in place, you work directly with Marex Group and its software developers who provide one-on-one project management." ■

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Identifying the right combination of storage solutions for your business depends upon many factors including your infrastructure, industry-specific requirements and the different ways users need to work with and access critical data now and in the future. To determine where and how tape might best fit your data protection and storage management needs, first consider your current and anticipated data growth — how you acquire, use and manage your data as well as how much of it you'll need to manage should all factor into your buying decisions.

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CDW's team of experts has the knowledge and experience to assist you with any type of storage issue.

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Why CDW?



This reference guide offers an overview of Document Management Systems (DMS) and how they can be utilized for business applications.

Whether your firm is medium sized or at the enterprise level, CDW has specialists on hand that understand you. We know how important it is that you are able to do what you do and we offer assistance during all stages of design and deployment of your new DMS.

We offer resources far beyond the hardware and software necessary to build a DMS. We focus on providing the best solutions in the industry — not simply the latest solutions from a single provider. By building strong partnerships with industry leaders and leveraging our talent with their resources, we are able to drive out the best possible solutions for our customers.

At CDW, we have the technology and the talent to meet your

needs. We offer a complete selection of IT hardware and software at competitive prices. The offerings range from scanners and software for document input and processing to secure storage devices and access, control and information lifecycle management tools. We also have resources available to deploy to your location for onsite consultations and demonstrations.

Wherever we go we are never alone. Behind each and every CDW account manager is a talented team of document management specialists who are on hand to offer in-depth industry knowledge, real-world experience and one-stop access to world-class partners, ensuring that every interaction with CDW is a positive interaction.

At CDW, we're committed to providing you with the very best in consultation, design, delivery and support. Our overriding goal is to ensure your satisfaction over the long run. At CDW, we have designed our company with your goals in mind.



Chapter 3

Document Management

IN THIS CHAPTER:

- Store and Find
- Access
- Auditing
- Indexing
- Archiving

The actual management of documents, whether it's in a large enterprise or medium-sized business, can be challenging. Many different document users, each with their own expectations, will depend upon the DMS to ensure that the documents they need are easily accessible and presented in a manner that is useful.

Store and Find

Document management systems store and find documents based upon a wide range of criteria. Management of the system involves determining the types of files being stored and searched for, as well as how often this operation occurs.

For example, if you work for a medium-sized manufacturing firm, you might have a fair amount of documents (invoices, purchase orders, bills of material, engineering change orders and reports) that need to be searched frequently by staff. For the most part, these are documents that are changed or updated infrequently. In this situation, a document repository may be what is most warranted. Although not an official term, repository is often used to denote a DMS that changes infrequently.

A Content Management System (CMS) is a type of DMS that offers content to users as well as collects information from them, and can generate documents from that information. In contrast to a document repository, a CMS involves a higher volume of document turnover or more rapid document gathering via electronic means.

For example, FileBound, a Web-based service that allows users to interact, upload documents, check out documents, manage lists (as in Microsoft Excel) and display pictures, is a CMS widely used in commercial sectors. Because of the ease of access (via Web

interface), it's difficult to discern where the Web site ends and the document management functions begin.

FileBound offers an intuitive, organic means of document management that handles high-volume document activity well. Users upload documents to share with the team in a collaborative environment, and all team members can search through all documents for pertinent information.

Whether the business may benefit most from a document repository, a CMS or both, keep in mind that future retrieval of documents is not hindered by file type or version. To illustrate this point, consider any word-processing document created prior to 1990. A copy of an office suite known as PFS: First Choice was popular in the late 1980s, but those documents are all but inaccessible with the latest version of many popular word-processing systems.

Only in recent years has a conscious decision been made by digital document leaders, such as Adobe, to ensure standards are built that will remain open and compatible with future systems. The previous chapter discussed PDF/A and Microsoft's new XPS format, both having the promise to remain compatible for many years to come.

Access

Regarding document access, there are two universal maxims in document management:

- Documents that cannot be accessed when needed cost the business money.
- Documents accessed by nonauthorized personnel represent

a liability and definite threat to the business.

Thus, at this stage of document management, you must be concerned about security, control and compliance.

Security can be broken down into three basic tenants that form what is known in information security circles as the Confidentiality, Integrity and Availability (CIA) Triad.

- Confidentiality — Confidentiality refers to the prevention of unauthorized disclosure of information. Disclosure of data through the loss of confidentiality can occur in a number of ways including deliberate release, inaccurate or ineffective document security controls or the failure to apply properly defined security controls.
- Integrity — Integrity means ensuring that no unauthorized alterations are made to data. Or in this case, no unauthorized changes to documents. Integrity loss can occur through deliberate, unauthorized tampering, software or hardware malfunction and human error.
- Availability — Availability refers to the timely delivery of data to those who require access. This means ensuring all who need access receive access when they require it. Loss of availability, like integrity, can result from deliberate action, unauthorized use or misuse, software or hardware malfunction and human error.

Maintaining confidentiality, integrity and availability is essential to document management security and failure to do so can open the firm to legal and compliance risks.

To protect documents from unauthorized disclosure, the business may wish to adopt a few high-level policies:

- Acceptable Use Policy (AUP) — The purpose of an AUP is to outline the acceptable use of computer equipment and resources. These rules are put into place to protect staff as well as the organization. Inappropriate use of a computer system can expose an organization to risks that include virus attacks, compromised network systems and services, and legal issues.

You may want to develop a separate AUP specifically for the acceptable use of documents to meet regulatory compliance, and to help prevent inappropriate use of sensitive information. An AUP is an important document to have on file should any rules violations require corrective action from a human resource or legal perspective.

- Access policies — Access policies clearly define the credentialing process for users: who may authorize use and under what conditions access may be granted. Many businesses use differing levels and types of access policies, from those that grant physical access to a location to those that grant access to a particular database or DMS.
- E-mail policies — E-mail policies define how e-mail is sent, received and retained. An auto-forward e-mail policy may be

used to define the use of auto-forwarding and what conditions need to be met for this to be allowed. An e-mail retention policy may dictate which e-mail needs to be retained, where and for what duration.

- Information sensitivity policies — An information sensitivity policy is intended to help staff determine what information can be disclosed to unauthorized personnel, as well as the relative sensitivity of information that should not be disclosed outside of the organization without proper authorization.

All companies have secrets. Some are technical such as the detailed specification of a production process; some are business-related such as a list of customer names and addresses, which would be useful to a competitor. An information sensitivity policy should be used to guide staff in the handling of these types of documents.

- Password policies — Passwords are the front line of protection for user accounts. A poorly chosen password may result in compromised sensitive information. A password policy sets forth standards for the creation of strong passwords, the protection of those passwords and the frequency of change.



Auditing

To reduce the risk of falling outside any legal or compliance concern faced by the business, regular audits of the DMS should be performed to ensure that confidentiality, integrity and availability are being maintained. Granting access to a document is not typically handled as an all-or-nothing equation. Different users within the firm may require varying degrees of access, from simply viewing a document to managing document creation, modification, deletion and archiving.

In addition to using Access Control Lists (ACLs) to limit the capabilities of users within the OS or within a network environment like Active Directory, certain document formats can control user rights. Adobe Acrobat, for example, enables you to protect documents with passwords and apply restrictions on printing, copying and altering. These restrictions are applied to the documents themselves, so you can be assured that your documents are protected even after they leave your DMS.

Indexing

As pointed out in the previous chapter, the simplest form of document management is the capture of document images that can later be printed. From an information perspective, these images are relatively useless because virtually none of the information contained within the document has been indexed. Once the information in the document is read and recognized either through optical character recognition, DMS input or user intervention, that data can then be indexed.

Indexing is the process of converting a collection of data into a database suitable for easy search and retrieval. Automating the capture and indexing of document data is important to improving the efficiency of the process. It's during indexing that the document tags are created that will enable the search for documents within the DMS.

A good DMS will allow you to define indexing priorities to help minimize disruption to existing document filing procedures. If your traditional document filing system includes a combination of date, time and a user identification number for the file name, you might want to index documents based upon these familiar qualities at first, to ease the transition into the new system.

Although it is possible to index the entire

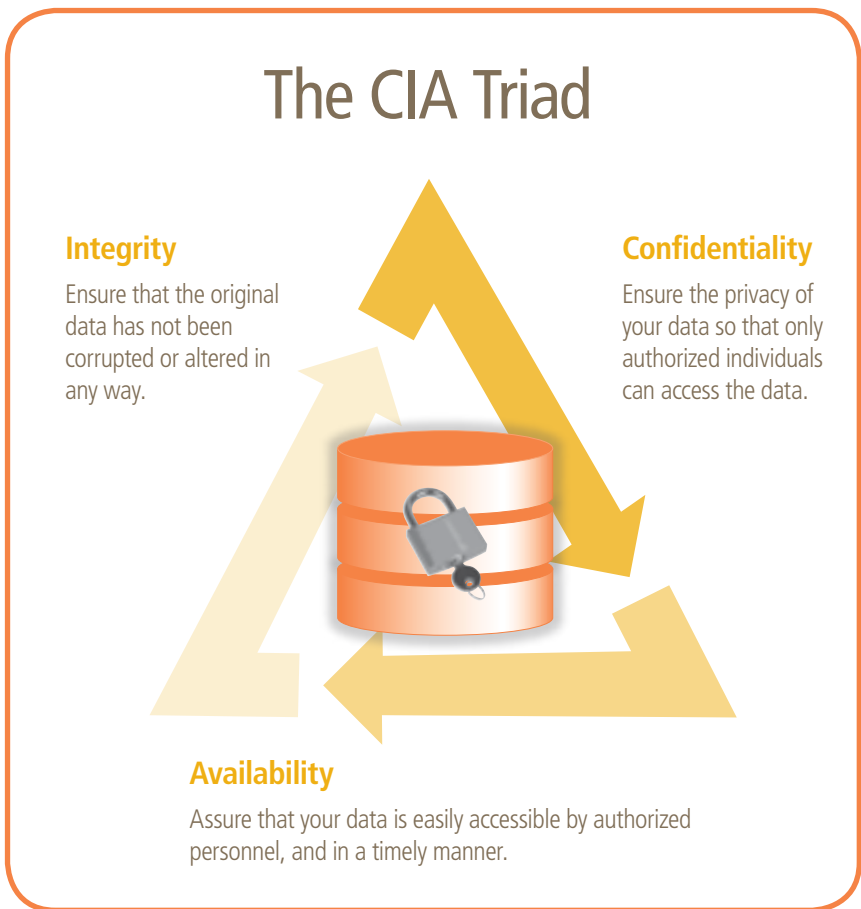
content of a document, care should be exercised to index only the information required to locate and retrieve the document. Aside from the security and storage concerns presented by indexing the contents of every document, too much information can slow search response and make it more difficult to locate individual documents.

Outside of a full DMS, individual documents can be indexed in other ways. Adobe Acrobat Reader allows users to search a collection of PDF files, and Microsoft Windows Indexing Service extracts information from a set of documents and organizes it for easy access through the OS.

Archiving

Archiving is the process of backing up selected documents that no longer need to be accessed on a regular basis within the DMS. Effective archiving means safely storing critical data in a highly accessible manner.

During the archiving process, documents often go through different stages and types of storage, which is referred to as Hierarchical Storage Management (HSM). HSM is the process of automatically storing data on the lowest-cost devices that can support the



Integrity

Ensure that the original data has not been corrupted or altered in any way.

Confidentiality

Ensure the privacy of your data so that only authorized individuals can access the data.

Availability

Assure that your data is easily accessible by authorized personnel, and in a timely manner.

performance required by the applications.

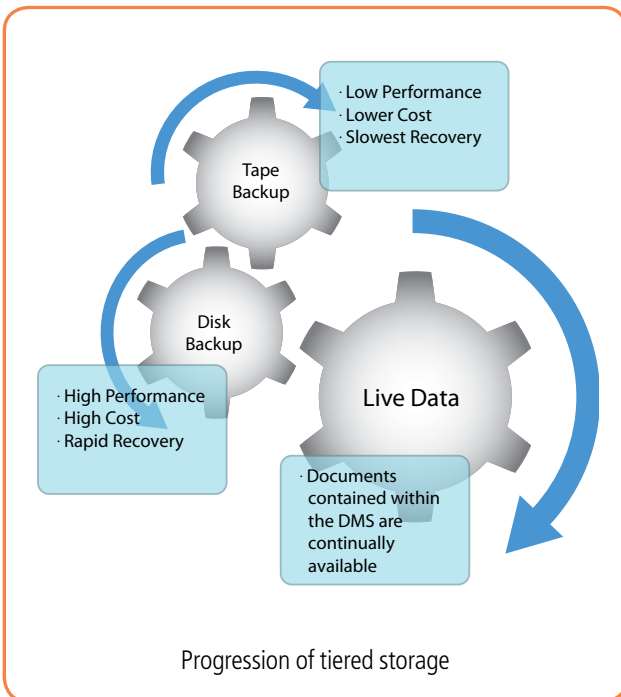
In HSM, documents are removed from online disk storage (live storage) to a lower-cost media such as tape or optical disk. If the hardware and software used for archiving supports on-demand recovery, archiving offers a near-online solution, allowing documents to be stored on slower, less costly media (such as tape) and accessed within a few minutes rather than a few seconds.

The architecture of an archive is highly dependent upon the firm's need to retain data. Going back to the repository versus CMS example, archiving in a DMS repository may mean storing lesser-used records — such as old invoices and purchase orders, engineering drawings or records held only for regulatory compliance — in an offline or near-offline state.

CMS archiving, however, may retain access to information as recent as last month that no longer needs to be displayed at the forefront of the CMS system. No matter what archiving solution you require, it must be secure, scalable and integrated into every facet of document management so that all content, from regulated documents to e-mail, can be easily recovered when needed.

Archiving Storage

Archiving storage can be as easy as backing up to tape in smaller offices. But for larger environments, long-term storage will typically happen through a series of tiers. Tiered storage is a data storage environment that is comprised of two or more storage types that are used in concert to meet the short- and long-term needs of the DMS. The differences in the types of storage used are usually along



one of four lines: price, performance, capacity and function.

For example, if a firm requires rapid recovery of the DMS due to a failure during business hours, but isn't likely to require a restoration past 24 hours (which would mean that the company is a short-term document user), a high-performance disk storage solution may be used to perform frequent local or network backups during the day. Then each night a backup may be written to a less expensive (slower) tape media. This is an example of tiered storage commonly referred to as Disk-to-Disk-to-Tape (D2D2T). This hybrid storage solution is primarily appropriate for medium-to-large environments.

D2D2T

In D2D2T, data is first copied to storage on another disk (D2D), and then periodically copied again to tape (D2T). Large scale, high-performance DMSs, which could potentially consist of many individual DMS servers, may have a production assurance or continuity need to have their documents immediately available for recovery from secondary disk.

Any significant change in performance, capacity or function can be implemented as a secondary tier. In the D2D2T example, there is a change in all four categories: performance, capacity, function and price. But tiers could easily be made up of low-capacity media for short-term storage and large-capacity media for long-term storage, or high-performance media for short-term storage and low-capacity media for long-term storage. Tiered storage can be used to cut costs by implementing storage solutions that directly meet the size of the need at the appropriate time by utilizing multiple storage tiers. ■



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Chapter 4

Storage Management

IN THIS CHAPTER:

- Storage Media
- Storage Considerations

Beneath the document management system lies a vast array of choices in storage devices. Storage management encompasses both physical and virtual storage components. When relating storage management to DMS, you need to assess the overall storage requirements, where the documents will be stored and how they will need to be accessed, by whom, how often and from what location.

Storage management of a DMS begins with the database. A database is a structural way of housing information. In document management systems, databases drive much of the presentation and storage. In a CMS, the data and which particular pieces of the data are displayed (for example, the fields you display or the order in which you display the data) do not have to mirror the way the data is actually stored within the storage infrastructure. Take particular care when choosing a DMS to note the database infrastructure, as each is going to have its own particular storage needs.

The following list highlights common questions to ask when looking at the underlying database in a DMS:

- Will it run on my hardware or commonly available hardware?
— If your organization already uses Microsoft SQL Server and you have a budget and staff to support Microsoft SQL, it might be wise to stick within the realm of current expertise.
- How fast can documents be recovered?
- How fast is the indexing?
- Can you set your own index parameters or customize the index within the database itself?
- Will the performance degrade significantly over time and,

if so, can you scale up to larger hardware solutions to meet the demand? How complicated or costly will it be to do so?

- How much does it cost? — Cost is always a factor, but failing to take aspects of the cost beyond the sticker price will itself be costly. Be sure to evaluate the Total Cost of Ownership (TCO) in hardware, software and ongoing technical support as a whole.

A few common databases being used in document management systems today include Microsoft SQL Server, MySQL and Oracle — all of which have their own particular advantages and disadvantages. Microsoft SQL Server and Oracle, for example, are both commercial products, whereas MySQL is an open-source solution.

Storage Media

Choosing the proper storage media for your DMS is critical to the ongoing success and adoption of the system. Failure to plan the storage architecture can lead to future problems with access, scalability, availability and resiliency. From the single workstation installation to complete enterprise storage solutions, DMS storage solutions can take a variety of forms to meet the needs and size of virtually any document management environment.

Direct Access Storage

Direct Access Storage (DAS) is a general term for disk storage devices such as hard disk drives. Direct access refers to how all the data is accessed directly in about the same amount of time, as opposed to sequential access methods (those used by magnetic tape).

In its most basic form, a DAS device attaches directly to a computer as either an internal hard disk drive or external device, such as a USB-attached hard drive. A standalone DAS device often makes a poor choice for storing documents except for the smallest of office workstation applications. Typically, DAS devices lack the architecture needed to provide a sufficient amount of redundancy, scalability and resiliency.

More generally, DAS devices are the foundation for many types of storage solutions including Redundant Array of Independent Disks (RAID), as well as Network Attached Storage (NAS) and Storage Area Network (SAN) solutions.

RAID Arrays

A RAID is a collection of disk drives that offers increased performance and/or fault tolerance. There are a number of RAID levels. Those most commonly used in a DMS are RAID 0, RAID 1, RAID 5 and RAID 10.

- RAID 0 (also known as a striped set) splits data evenly across two or more disks with no parity information for redundancy. RAID 0 is used primarily to increase performance.
- RAID 1 (also known as a mirror) creates an exact copy of a set of data on two or more disks. This is useful when write performance is more important than minimizing the storage capacity used for redundancy.
- RAID 5 (a stripe set with parity) uses block-level striping with parity data distributed across all member disks. RAID 5 has achieved popularity due to its low cost of redundancy.
- RAID 10 (mirroring combined with striping) uses a set of drives combined into a striped array. This striped array is then mirrored to another identical set of striped drives. RAID 10 provides the performance benefits of striping with the redundancy of mirroring. It is ideal for multiuser and server systems, but is the most expensive in terms of hard drive cost.

Medium-sized office DMS server infrastructures will typically demand RAID 1 or RAID 5 for fault tolerance. That is not to say that RAID 0 doesn't have its place. If document access speed and retrieval is your primary concern, a RAID 0 configuration, when combined with a sound (and frequent) backup methodology, may meet your needs. Rather than dedicate a server to storage, with all of its accompanying support and licensing costs, network-based storage can provide a good alternative for medium-sized business document storage.

NAS

NAS devices can be accessed over a computer network rather than being connected directly to a computer. This setup enables multiple computers to share the same storage space at once, minimizing overhead by centrally managing hard disks. NAS systems usually

contain one or more hard disks, often arranged into RAID arrays.

NAS was developed to deliver ease of use, provide for data sharing and enable businesses to simplify their data management. To do so, NAS solutions address several problems inherent to DAS. These include the administrative effort required to maintain servers and the challenges of scalability, reliability, availability and performance presented by server-based DAS solutions.

In recent years, the cost of NAS devices has plummeted and high-capacity NAS solutions — such as the Buffalo TeraStation Pro 2TB network attached storage, which offers 2 terabytes (TB) of storage — are available for very reasonable prices.

NAS solutions can thrive in medium-sized businesses as a cost-effective way to rapidly add storage. Larger organizations, however, often run into difficulty managing the number of NAS devices needed to meet their needs. If left unchecked, NAS devices can “sprawl” through an environment, creating challenges in storage management.

SAN

A SAN is a network designed specifically for storage and is usually built on infrastructure designed especially for that purpose. Because of their dedicated architecture, SANs tend to provide faster and more reliable access to storage than NAS offers. SANs are

NAS vs. SAN

NAS solutions may be useful for medium-sized offices that never intend to outgrow a 1TB to 2TB solution. But in larger enterprises, NAS can represent a problem in the form of sprawl. Sprawl is a term used to describe the unintended proliferation of differing hardware or software components.

There are many forms of NAS from many different vendors, and over time it's easy for NAS systems to start piling up. Managing different storage technologies from different vendors can be a real headache for administrators. SAN offers a centralized, reliable and manageable solution that can scale to meet the needs of any size infrastructure.

scalable, highly available and come with a clear benefit over NAS solutions in being easier to centrally manage.

Fibre Channel is the most common SAN technology and utilizes a SCSI command set. A Fibre Channel SAN is usually made up of a number of Fibre Channel switches that are connected to form a SAN “fabric.”

Internet SCSI (iSCSI), which uses the same SCSI command set over Transmission Control Protocol/Internet Protocol (TCP/IP), is another popular type of SAN architecture. In an iSCSI architecture, the switches are Ethernet switches and the network is not referred to as a fabric. iSCSI is a generally less-expensive alternative to Fibre Channel because it can use existing copper-based networks.

Medium-sized firms that plan to grow storage requirements can start with one of the many SAN solutions geared to the entry-level SAN community. The HP StorageWorks Modular Smart Array 1500 SAN SCSI Starter G2 Kit is a cost-effective and easy way to get started with SAN and offers expandable storage to meet the growing demands of a document management system.

By now you should have a general idea of which storage solution

Continuity and disaster recovery planning... should be taken into account as a critical storage consideration.

might work best for your environment. If your DMS is simply going to be for a few documents that do not need to be archived, and your workstation is backed up regularly, a workstation-based DAS solution may meet your needs.

If you intend to share the documents among many users, DAS on a server in a RAID configuration, or as a more affordable alternative, a NAS device, may meet your needs. However, if you're going to be dealing with thousands of documents shared among many users and demand the utmost in scalability, performance, resilience and data protection, implementing a SAN is the best way to go.

Storage Considerations

For a storage solution to be considered viable for document management, it must be measured against your document management needs. Taking time to consider how your documents will be accessed, by who and how often are good starting points. You will also want to consider the overall volume of documents to be managed, and remember to review how legal and regulatory compliance will come into play for document archiving and retention in your workspace.

Continuity/Disaster Recovery Planning

Business continuity and disaster recovery planning — planning specifically focused on creating a comprehensive plan of actions to be taken before, during and after a significant loss of information systems resources — should be taken into account as a critical storage consideration.

During the continuity planning process, a detailed analysis should be conducted of both threats and impacts. For example, if a threat of natural disaster, such as a hurricane or earthquake, has the potential to impact a data center where the DMS is stored, a solution should be aligned to mitigate the impact.

Consolidation

There are essentially three stages of consolidation that any enterprise IT resource can go through:

- Logical consolidation — Focuses on the centralization of management of IT resources and is commonly referred to as unified management.



Physical consolidation, which is often realized hand-in-hand with centralized consolidation, is an easy entry point for standardization efforts...

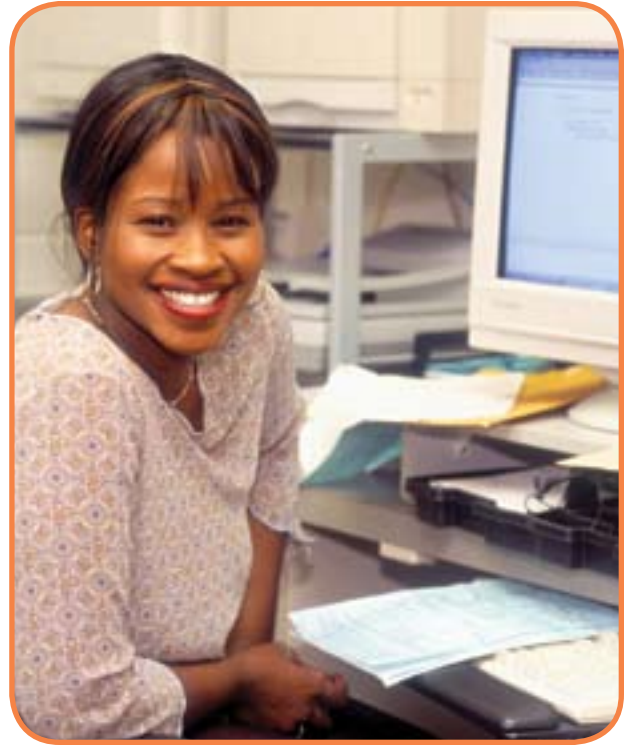
- Centralized consolidation (co-location) — Is the physical consolidation of servers, storage devices or other infrastructure components to a central location — usually a data center.
- Physical consolidation (compiled workload) — Involves the compiling of workload from multiple servers or storage devices onto a single server platform; in terms of storage, this may be the equivalent of replacing multiple independent RAID 5 storage arrays on many separate servers within a SAN.

Logical consolidation is essentially what is already being done to documents by implementing a document management system. In doing so, the DMS consolidates the management of documents to one unified system. That same concept applies directly to the storage infrastructure as well. As noted earlier, if your organization has already consolidated to a single solution, such as Microsoft SQL Server, the most cost-effective approach may be to continue to leverage that existing state of consolidation.

The most cost-effective step to implement is usually logical consolidation. For some businesses, this might simply mean the purchase and implementation of software capable of simplifying the management of all storage assets under one system.

Centralized consolidation involves the co-location of physical storage devices and is usually more costly to implement than unified management, depending on the size and complexity of the storage infrastructure.

If a business, for example, currently has data stored sporadically across the infrastructure, consolidating the data to one data center will simplify the management of the data to that infrastructure. Physical consolidation, which is often realized hand-in-hand with centralized consolidation, is an easy entry point for standardization efforts, as this involves the simplification and standardization of an infrastructure, often to a single platform.



Legal and Regulatory Compliance

Legal and regulatory compliance may also encourage appropriate backup and recovery systems be put into place to protect information from accidental loss or destruction. This may warrant a larger scale media storage architecture than was originally forecast, such as a SAN, which provides a consolidated, fault-tolerant and scalable storage solution. ■



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Glossary

This glossary should serve as a quick reference to the most important terms touched on in the guide.

Acceptable Use Policy (AUP)

Business organization guidelines that specify the appropriate use of equipment and resources. These guidelines may cover access, e-mail, information sensitivity and password policies.

Access Control Lists (ACLs)

A list that specifies what access privileges users have to a directory, specifically, the right to look up, insert, delete, read, write, lock or administer files.

Archiving

The intelligent backup of selected documents that no longer need to be accessed on a regular basis.

Auditing

The process of regularly reviewing a document management system to ensure continued confidentiality, integrity and availability.

Color depth

The number of pieces of information (bits) that can be captured for each pixel.

Confidentiality, Integrity and Availability (CIA) Triad

An IT security framework that stresses the importance of securing confidentiality, integrity and availability in document management.

Content Management System (CMS)

A system designed for the creation, modification, archiving and removal of digital information from an organized repository. A CMS may include tools for publishing, format management, revision control, indexing, search, retrieval and collaboration.

Direct Access Storage (DAS)

A very basic approach to disk storage, often consisting of a device that attaches directly to a computer and allows access to all of the data in the same amount of time.

Disaster recovery planning

A comprehensive plan of actions taken before, during and after a significant loss of information systems resources that addresses both threats and impacts.

Disk-to-Disk-to-Tape (D2D2T)

A backup methodology in which data is copied from one disk to a second disk, and from the second disk to magnetic tape.

Document Management Workflow

The path a document takes — and the individuals that interact with it — as it makes its way from system input to storage.

Document repository

A DMS approach for data that is searched frequently but changed or updated infrequently.

Document scanner

A term used to describe a wide array of document imaging devices, including flatbed, multifunction and paper-fed scanners.

Dots per inch (dpi)

A measurement unit that defines resolution.

Duty cycle

A measure of how many scans a scanner can process in a day.

Fibre Channel

A network technology that utilizes a SCSI command set and is made up of a series of switches that all connect to form an interconnected SAN "fabric."

Hardware capture

Physical document capture that is facilitated via a capture device, such as a scanner.

Health Insurance Portability and Accountability Act (HIPAA)

Legislation passed in 1996 that includes a privacy rule creating national standards to protect personal health information.

Hierarchical Storage Management (HSM)

An approach to document archiving that emphasizes the storage of data on the lowest-cost devices that can support all of the connected applications.

Indexing

The act of describing or identifying a document in terms of its subject content.

Interface

A hardware or software link that connects two computer systems, or a computer and its peripherals.

Internet Small Computer Systems Interface (iSCSI)

A SAN architecture that uses the SCSI command set over TCP/IP in conjunction with Ethernet switches.

Interpolated Resolution

A measure of the scanner software's ability to enhance an image and increase the resolution by guessing at the color of a dot in between dots of a known color.

Legal Compliance

Regulatory and legal compliance concerns — such as those presented by the Sarbanes-Oxley Act, the Gramm-Leach-Bliley Act, the Basel II Accord and HIPAA — that pressure business to more stringently manage documentation throughout the enterprise.

Networked Attached Storage (NAS)

A network attached storage device — accessed over a computer network rather than being connected directly to a computer — that is dedicated to nothing more than file sharing.

Optical Character Recognition (OCR)

A software process that takes a scanned document and attempts to recognize the letters and words on the page.

Optical resolution

A measure of the detail level at which a scanner can capture a document in pixels.

Pixel

The smallest picture element of a digital image. A digital image is composed of millions of these tiny dots.

Portable Document Format (PDF)

The de facto standard format for digital documents. PDF's popularity stems from its device and resolution independence, which allow it to be read on most any computer platform and device.

Redundant Array of Independent Disks (RAID)

An approach to data storage that emphasizes increased performance and fault tolerance and involves a collection of disk drives arranged in different levels.

Resolution independent

A feature of the PDF document format that allows it to be resized and displayed on virtually any device.

Software capture

Document capture process that begins with a user entering data into a digital form, followed by the conversion of an image of the created document into a format that can be indexed, edited and used within the DMS.

Storage Area Network (SAN)

An enterprise network designed specifically for data storage that emphasizes fast, reliable access, scalability and centralized management.

Storage consolidation

The uncoupling of storage from servers, placing storage on a separate network where it can be shared for provisioning on an as-needed basis. This is what is happening to documents with the implementation of a DMS.

Storage management

The process of overseeing both the physical and virtual aspects of data storage, including the database itself, overall storage requirements, document storage and document access.

Tagged Image File Format (TIFF)

An industry-standard file format developed for the purpose of storing high-resolution, bitmapped, grayscale and color images.

Total Cost of Ownership

A TCO analysis offers a final statement reflecting not only the cost of purchase but considers all aspects in the further use and maintenance of the equipment, device or system.

XML Paper Specification (XPS)

A specification designed to provide users with a consistent document appearance regardless of where and how the document is viewed, much like an open-source PDF system.



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Document Management

Reference Guide

Look inside for more information on:

- The benefits of content management for business
- Choosing the right document-capture solution
- Document management software that best meets business needs
- Guidelines for document-access security
- Creating a tiered-storage solution

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