

WHITE PAPER

Hardcopy Peripherals Play an Increasingly Crucial Role in Optimizing the IT Environment

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IT DEPARTMENT'S RESPONSIBILITY FOR HARDCOPY PERIPHERALS

Many companies have recognized the need to examine the IT infrastructure from both a cost perspective and a performance standpoint. This analysis can be referred to as "IT optimization," and it includes an examination of computer hardware, software, and workflow processes to ensure peak performance of IT operations within the enterprise.

One of the most often overlooked pieces of the IT optimization process is in printing and copying, or hardcopy as a whole. Perhaps the main reason that hardcopy is overlooked is the multilevel ownership/responsibility of the category. That is, printers are usually the responsibility of the IT department or individual departments, while copying equipment is usually managed by the facilities/office management department. The lack of a centralized point of management for hardcopy typically results in companies not being totally aware of their entire hardcopy equipment fleet. This lack of awareness about the fleet also translates into the high probability that these companies have little knowledge about how much they are spending to run hardcopy equipment on an ongoing basis. IDC has found that the costs to operate hardcopy equipment can be significant, especially if these costs are relatively unmanaged.

However, IDC has seen some changes in this traditional chain of responsibility that have expanded IT's role for hardcopy. IDC's research shows that an increasing number of copiers are being configured as multifunction devices. Thus more copiers are getting integrated with a combination of fax/print/scan capabilities and getting connected to the network. There are several reasons for this evolution in the copier market, ranging from a simple cost-savings measure (e.g., consolidating multiple machines into one single machine or reducing maintenance and supplies management of devices) to the desire to incorporate a comprehensive document solution into the hardcopy fleet. This shift to a more comprehensive document solution extends the machine's value proposition beyond copying to a new level of document distribution and management capabilities for both paper and electronic document forms.

As a result of this market transition toward network connectivity and multifunctionality for copiers, IT is now playing a more significant role in the decision-making process for this type of equipment as well. This transition has caused IT to be increasingly involved in evaluating and deploying a greater array of document technologies from

hardware, software, and services. For companies to run as cost effectively and efficiently as possible, it is important for IT to be informed about the specifics of what technological developments are available to optimize the IT environment, particularly in hardcopy, where IT's responsibility is on the rise.

The purpose of this white paper is to communicate the importance of recognizing and understanding the crucial role that hardcopy devices play in optimizing IT operations. Many of the issues revolving around the hardcopy aspect of IT optimization are found in getting an understanding of all hardcopy costs. This means quantifying not only the hard costs of equipment, toner, and maintenance but also some of the other key elements of hardcopy costs that may not be as well-known but are critical to the IT optimization process.

IDC research reveals that hardcopy is not usually high on the IT priority list. Replacing or upgrading computing equipment, software, and networking technology is high on this list, but hardcopy peripherals usually fall much lower. This creates a paradox in that hardcopy is becoming increasingly important for IT departments as they gain more responsibility for these machines, yet their priority for hardcopy peripherals' optimal performance is often not ranked very high.

In survey work with IT managers, IDC has found that IT "hot buttons" revolve around efficient equipment operation. Hardcopy product characteristics that rate high with IT include:

- Reliability of the equipment to be installed on the network
- Quality
- Ability to work in the current IT environment
- Ease of installation and support of the hardware and software/applications
- Efficiency

Hardcopy products that rate high in these attributes will have credibility with the IT department. These will be increasingly critical as the IT department gains more control of hardcopy decision making in many companies. These attributes revolve around product performance, but also around costs. Hardcopy costs include the hard costs of the equipment as well as the soft costs that impact increased productivity and efficiency. The sections that follow discuss the role that costs can play in optimizing the hardcopy environment and identify available technologies that satisfy the IT hot buttons mentioned above.

UNDERSTANDING COSTS AND THE IMPACT ON OPTIMIZING THE IT ENVIRONMENT

Hardcopy hard costs are easy to understand. However, some buyers still look at this as comparing specifications and the purchase price of various models. A more comprehensive and necessary analysis comes from examining total cost of ownership and its place in IT optimization.

Total Cost of Ownership

IDC uses a total cost of ownership model that includes hardware price, toner/ink price/yields, other component price/yields (e.g., drums and developer) that may require replacement during the life of the product, and maintenance costs. The model amortizes these costs over a time period, typically over the expected life of the product. Various page volumes also need to be determined to assess maintenance requirements and what those costs will be over the life of the product.

IDC recommends that buyers examine these elements as well, not just the initial purchase price, when making hardcopy acquisitions. A relatively simple analysis, (shown in Table 1) demonstrates that even a very small difference in total cost of ownership can make a significant cost difference over the life of a product. For the purposes of simplicity, the first product (device A) has a total cost of ownership of 1 cent per page, while the second product (device B) has a total cost of ownership of 1.1 cents per page, a difference of only one-tenth of a cent per page. IDC's page volume research has determined that a typical networked black-and-white laser printer generates approximately 10,000 pages per month. Using this data, one can see that cost savings add up over various periods of time. Of course, this only compares the cost differences found for one device. It would be more likely that companies would incorporate several devices in their workplaces, resulting in much higher cost savings over the entire fleet. For example, even a relatively small company might have 20 hardcopy devices. Since the per-device savings has been calculated at \$120 annually, multiplying this figure by 20 results in a savings of \$2,400 in one year, \$7,200 in three years, and \$12,000 in five years. The key point to be made is that cost of ownership, not just hardware price, is a more accurate gauge of hardcopy costs, and it can result in a more optimized IT environment from a cost standpoint.

The numbers used in Table 1 are fictional to illustrate the importance of considering cost of ownership even with a very small difference in costs. The actual cost differences between similar workgroup models are typically much larger. IDC's *2003 Cost of Ownership Study: Inkjet and Mid- to High-Speed Monochrome and Color Hardcopy Peripherals* (IDC #30527, February 2004) shows the costs for workgroup black-and-white laser printers can range from less than 1 cent per page to nearly 3 cents per page. By using these lowest and highest cost-of-ownership figures and making the same calculations from Table 1, Table 2 shows the staggering differences in costs per device (e.g., \$2,400 annually, \$7,200 in three years, and \$12,000 in five years). When these costs are multiplied over a number of devices rather than just one device, the cost differential can be eye opening. Obviously, using cost-of-ownership figures is a key ingredient in determining the cost optimization in the IT environment.

TABLE 1**Cost Comparisons of Two Hardcopy Devices over the Life of the Products**

	Device A	Device B	Difference
TCO (cost per page, \$)	0.010	0.011	0.001
Pages generated monthly	10,000	10,000	–
Monthly costs (\$)	100	110	10
Annual costs (\$)	1,200	1,320	120
Three-year costs (\$)	3,600	3,960	360
Five-year costs (\$)	6,000	6,600	600
20 devices savings over one year (\$)	NA	2,400	–
20 devices savings over three years (\$)	NA	7,200	–
20 devices savings over five years (\$)	NA	12,000	–

Source: IDC, 2004

TABLE 2**Range of Costs Between Two Hardcopy Devices — Lowest Cost per Page Versus Highest Cost per Page**

	Best Case	Worst Case	Difference
TCO (cost per page, \$)	0.007	0.027	0.020
Pages generated monthly	10,000	10,000	–
Monthly costs (\$)	70	270	200
Annual costs (\$)	840	3,240	2,400
Three-year costs (\$)	2,520	9,720	7,200
Five-year costs (\$)	4,200	16,200	12,000
20 devices savings over one year (\$)	NA	48,000	–
20 devices savings over three years (\$)	NA	144,000	–
20 devices savings over five years (\$)	NA	240,000	–

Source: IDC, 2004

Cost of ownership is not the only cost that needs to be examined to optimize the IT environment. Other cost considerations that can reduce overall hardcopy expenditures revolve around the type and number of devices used. This can involve the deployment of single-function printers and MFPs. IDC has witnessed copy and fax page volumes mature over the past several years, but the need for these capabilities is still critical for companies today and into the future.

However, MFPs present an opportunity to consolidate multiple functions into one machine, which can lead to several cost benefits, including:

- ☒ **Fewer machines.** A lower number of devices will require less time and fewer resources to manage.
- ☒ **Lower maintenance costs.** A lower number of devices will require a lower number of maintenance contracts, and associated maintenance costs will be reduced.
- ☒ **Lower supplies management and inventory requirements.** Consolidating single-function hardcopy devices (printer, copier, and fax machine) into one MFP lessens supplies requirements for three different machines (and three different ink/toner cartridges) into one machine (with one ink/toner cartridge).
- ☒ **New equipment that incorporates a lower cost of ownership.** Replacing aging equipment with new MFPs that incorporate a lower cost of ownership can lower overall costs to operate hardcopy equipment. Tables 1 and 2 illustrate that the savings can be substantial in such cases.

By considering these hard costs more closely, the IT department, with its increasing responsibility for hardcopy equipment, can make more cost-efficient decisions for the company's hardcopy requirements. Nevertheless, these costs are only the "tip of the iceberg" when it comes to optimizing the IT environment. Further analysis of the often hidden "soft" costs can enhance a company's document activity from a performance standpoint.

Hidden "Soft" Costs and Their Importance

Hardcopy soft costs are typically associated with the addition of hardware or software tools that improve hardcopy operation. The actual cost savings for these "soft" costs are more difficult to quantify, but the performance gains are apparent as the technology is deployed and used within an organization. This section will discuss how companies can benefit from using these technologies and point out the efficiency gains from their deployment in the hardcopy environment.

Some of the tools that have recently become more prominent in the hardcopy environment revolve around document accounting systems, scanning, wireless technology, remote diagnostics, simple-to-use device drivers, and comprehensive computing support.

Tracking Hardcopy Usage

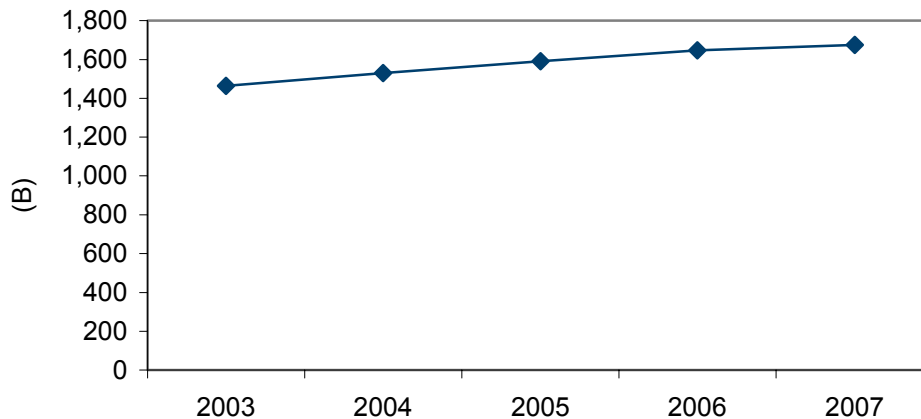
A document accounting system tracks the volume of hardcopy document activity — copies, faxes, and prints — produced by hardcopy equipment. Such a system can generate a report that details page volume by any number of criteria, including by project, by date, by client, by user, or by department. These systems have their roots in professional services firms (e.g., legal firms) that bill back page volumes to clients to help generate revenue. Recently, document accounting systems have gained attention by uncovering page volume activity in office settings. By using a document accounting system, companies better understand their document workflow and can implement changes to improve document processes based on the knowledge provided by the system.

However, only a small percentage of companies (with the exception of professional services firms using this technology as a bill-back system to clients) currently use a document accounting system to track hardcopy activity. As a result, most companies have little awareness about their hardcopy fleet and the costs of using their equipment, and very few have examined this infrastructure to determine how to optimize the deployment of all these devices. IDC estimates that companies spend up to 10% of their revenue on all document-related activity (e.g., input, management, and output). While this percentage does not seem large, the actual dollars can be substantial when considering multimillion-dollar organizations. Since companies have little awareness of their usage and costs of hardcopy equipment, waste and inefficiency in the fleet is not just probable but a virtual certainty in companies that do not track this activity.

Many companies probably believe that they do not have to track hardcopy output because they believe in the highly anticipated "paperless office." IDC dispels this theory as a myth. In fact, IDC's most recent page volume forecast (see Figure 1) shows ongoing growth for page volume through 2007. While the growth, at just over a 3% compound annual growth rate (CAGR), is not terribly high, there is growth nonetheless. Thus tracking page volume is a critical piece of understanding the costs of document activity and putting in place a plan toward greater efficiency and cost reduction.

FIGURE 1

IDC's Hardcopy Page Volume Forecast, 2003–2007



Source: IDC, 2004

The advantages of a document accounting system are numerous. It provides information on the typically unknown document costs, particularly the costs of printing, that occur as part of everyday business operations. Once document costs are better known, companies can initiate a plan to reduce document costs. This plan can include optimizing the placement and purchase of hardcopy peripherals, better managing machine downtime, lowering supplies inventory, and proactively attending to the maintenance needs of the machines. In essence, the document accounting system assists the IT department in gaining control over hardcopy peripheral usage and enhances the performance of the IT environment. As a result, the document accounting system can be a highly valued piece of the IT infrastructure.

Scanning

Until recently, scanning was relatively unknown compared with other document functions such as copy, fax, or print. These functions are very well established, and they are either entrenched into the IT environment or their usage is understood by the user community.

However, scanning has gained ground as a significant tool for document distribution and document management. Perhaps its greatest traction has come in the form of a fax document distribution replacement. Its advantages over fax are numerous and include:

- ☒ **Lower costs.** Scanning eliminates the expense of long distance telephone charges incurred by faxing.
- ☒ **Easy integration into the workflow.** A scanned document becomes part of the digital workflow, while a fax is a standalone document that is not part of any workflow.
- ☒ **Quality.** A scanned document maintains the quality of the original, while a fax is of lower quality and can be difficult to read.
- ☒ **Flexible sending capabilities.** Scanning destinations are numerous, including to a database, desktop, email, fax, file, or folder.

IDC end-user research has also confirmed the increased interest and usage of scanning functionality as a document management tool. As part of an MFP solution, scanning provides the ability to capture, distribute, integrate, and manage hardcopy documents into an electronic file format. This capability eliminates much of the costly, labor-intensive document distribution processes required for paper information into a more efficient electronic form that can be quickly disseminated to recipients via the network.

IDC's latest forecast on scanning integration is for 40% of multifunction monochrome laser hardcopy devices to have scan capability in 2007. Much of that activity is attributed to low-end personal devices that bundle scanning as part of the product package. On workgroup and departmental level devices for the office, the scanning connect rate is just under 30%. However, IDC projects that this market segment will have a scan connect rate of over 40% by 2007.

Driving this growth and increased interest for scanning are the inherent efficiencies and cost savings that can be gained. Scanning with an MFP can eliminate many manual or paper-intensive document processes that can help optimize the IT environment.

Wireless Technology

The growing adoption of wireless local area networks (LANs) and LAN adoption in homes and small offices has driven the interest in wireless printing technology. In addition, the growth of wireless LANs (e.g., 802.11) and wireless personal area networks (e.g., Bluetooth) has created an infrastructure that is capable of supporting wireless printing.

IDC's latest forecast of the worldwide wireless LAN equipment market shows a nearly 20% CAGR from approximately 26 million units in 2003 to more than 63 million by 2008. In addition, shipments of wireless access points, bridges, and gateways — the foundation for wireless infrastructure — will increase by a nearly 33% CAGR from just over 11 million units in 2003 to over 46 million units in 2008. As a result, the significant anticipated adoption for wireless LANs indicates that there could be a similar demand for wireless printer connectivity options during this forecast as well.

These wireless technologies have been around for some time, but with standards becoming increasingly better defined, the opportunity for wireless printing has opened up. As a result, many current wireless LAN users are demanding a wireless printing option that leverages the functionality of the wireless network. Additionally, there is an increased demand for shared devices where previously only personal devices might have been used (e.g., home or home office).

IDC estimates that most wireless LAN deployments will come in homes and small offices because wireless technology provides the easiest entry to new LAN deployments with few price barriers to entry (e.g., cabling) and pricing continues to fall for wireless networking components. New higher-bandwidth standards will maintain some price stability and keep wireless adoption from price-sensitive devices. However, these higher-bandwidth standards could open up opportunities for color and scanning functionality.

Overall, IDC's latest wireless printing forecast shows a 40% CAGR from 231,800 units in 2003 to nearly 1.25 million units by 2008. This includes 802.11/Bluetooth printing devices as well as print servers and print adapters for these environments. This increased penetration of wireless technology into the print environment now provides new IT performance enhancements for easy network deployment and easy device accessibility anytime or anywhere.

Remote Management

Related to wireless technology efficiencies, remote management gives an IT administrator the ability to check on the peripheral's status at any time and at any location. The advantage of incorporating this capability into the IT hardcopy environment is reducing the time to diagnose and service the machines. Many times, machine downtime is caused by a simple problem that is easily diagnosed.

However, without remote management capability, each reported problem requires a technician to be dispatched for resolution. This is an expensive and oftentimes inefficient use of the technician's time, particularly if the problem is relatively simple to correct. A remote management system allows the technician to diagnose and efficiently solve the problem remotely. Thus the time and effort needed to directly interface with the machine is eliminated in many cases, leading to greater hardcopy maintenance efficiency.

Device Drivers

In essence, a device driver is the interface for the user to operate the hardcopy device. Some customers have found it useful to have the same device driver interface across all device types — copiers, printers, or MFPs. The advantage of a common user interface across all devices is that it breeds familiarity with all devices and how to use them. This advantage can lead to significant cost and efficiency benefits by reducing training/education on the machine, easing the integration of new machines into the existing IT environment, and reducing help desk calls. Informal discussions with IT personnel indicate that print help desk calls typically represent an inordinate percentage of overall help desk inquiries to the IT help desk. Tools such as a common user interface or device driver can assist in lessening the number of help desk calls regarding hardcopy device usage.

Supporting All Computing Environments

While Windows holds a dominant position for both client and server operating environments, it is important that hardcopy peripherals have the ability to support a number of computing environments. IDC sees Linux increasing its penetration on both the client and server side, which is partially attributed to the perception that it can be obtained at a very low cost. In addition, Mac, Unix, mainframe, and OS/400 remain as viable operating environments that require hardcopy support. In some cases, this universal support for all computing environments is optional and may require an additional expenditure to incorporate the support on the hardcopy device. Of course, if this comprehensive computing support is standard, the cost of integrating the support is eliminated.

CONCLUSIONS

Any combination of these cost savings and performance enhancement tools should help bring about a more optimized IT environment. IT personnel need to be aware that hardcopy purchase evaluations should incorporate analysis of costs beyond the purchase price to gain a true understanding of the total equipment cost over the expected life of the device. In addition, a collection of efficiency tools such as document accounting systems, scanning, wireless technology, remote diagnostics, simple-to-use device drivers, and comprehensive computing support also aid in having an optimized IT environment for hardcopy. All of these tools combine to help IT gain more control over the printing environment, resulting in greater performance and efficiency with a more cost-efficient hardcopy fleet.

IDC believes that these technological advances provide a relatively quick return on investment (ROI) as well. In some cases, the total cost savings can pay for itself in a matter of months. In addition, the total cost savings can free up monies for increased investment in the IT infrastructure. The increased IT investment should be designed to allow the enterprise to move forward with the latest and more advanced information technologies.

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