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How To Choose The Best Printer For Your Needs

Printers are often the lifeblood of small businesses. A printer's role is even more critical in small and home offices, environments where a single piece of equipment must typically manage the entire printing workload.

Whether printing reports, forms, marketing materials, invoices, letters or other business information, an organization's printer is often the key vehicle through which critical communications flow. Thus, it is important organizations select the best printer for their needs when replacing an aging device or researching a new printer purchase.

Unfortunately, manufacturers' marketing and advertising copy can prove confusing and may make it difficult to determine which features and functions are truly necessary. Worse, differences in the ways manufacturers describe their products can make it difficult to accurately compare competing products.

This exclusive Computer Troubleshooters report reviews the various elements that must be considered when shopping for a new printer. In addition to exploring the differences between inkjet and laser printers, this report examines the importance of duty cycle ratings and weighs the tradeoffs encountered when selecting an all-in-one or multifunction unit.

This report concludes with a checklist designed to help you determine which printer models might best suit your business needs. For more information, contact your local Computer Troubleshooter.

Inkjet Or Laser?

The first question to consider when reviewing a potential printer purchase is whether your office requires an inkjet- or laser-powered printer. Both platforms possess their own benefits and drawbacks. Fortunately, it's fairly easy to determine which technology is best for your needs.

Inkjet printers typically cost less, at least up front. Most studies reveal that laser printers, however, deliver the least expensive cost-per-page over time. This is due, in part, to the

fact that laser jet ink cartridges generate exponentially more printouts than do their inkjet counterparts.

Carefully consider inkjet versus laser differences, as they impact quality, speed and costs

Inkjet Advantages:

- *Acceptable black-only print quality*
- *High quality color prints*
- *Low up-front costs*

Inkjets, typically, perform more slowly. Laser printers tend to easily outperform inkjets (producing more printed pages more quickly), thereby making laser printers a better bet, in many circumstances, for organizations generating a high number of monthly printouts.

Inkjets, however, are usually nosier. While laser jet printers make noise, they tend to be quieter than most inkjet counterparts.

Laser Printer Advantages:

- *High quality black and color printouts*
- *Less expensive printing over time*
- *Faster printing*
- *Quieter printing*

Quality is another element in which the two technologies differ. Laser printers produce high-quality pages. Many inkjet printers produce outstanding color printouts, while most laser printers produce results more than acceptable for typical corporate printing needs (such as for sales reports, interoffice communications and marketing materials). Laser printers also generate very-high-quality black-only pages. Inkjets, however, tend to boast features that often make them better-suited to printing photographs.

Thus, organizations needing to frequently print photographs or occasional color jobs and a few hundred black-only pages a month will likely find an inkjet printer well-suited to their needs. Those needing to print more than a few hundred pages a month, though, should consider purchasing a laser printer. Most color laser printers product high-quality color copies (and typically at less cost over the long run).

Scanning, Printing & Faxing

The next question to consider is whether your organization needs a print-only device or an all-in-one printer. Dedicated printers possess less electronic controls (such as copy or scanning engines) that could fail, whereas all-in-ones boast printing, copying, scanning and even faxing features.

Actual print quality (print resolution) and print features (including duplex printing capabilities) are sometimes higher in print-only devices, too, as manufacturers sometimes choose to reduce the quality of various features within a multifunction device to maintain an attractive price point. This is not universally true, however, as there are exceptions.

All In One Differences:

Not all all-in-one printers are equal. No standards define these multifunction machines. Most all-in-ones, though, provide printing, copying and scanning functionality. Some, but not all, add fax capabilities to the mix. For this reason, review a potential new purchase carefully to confirm it includes the features you require. Just because a model's marketed as an all-in-one doesn't mean it boasts all the functionality of competing products.

It stands to reason, though, that the more features there are packed into an all-in-one printer, particularly in low-priced units, the higher likelihood there is that print performance, print resolution or other features may have been sacrificed. Two items that frequently escape attention are the main paper tray's size and the type of scanning mechanism. Low-price all-in-one units rarely hold more than 250 sheets or so at a time. Meanwhile, auto-fed flatbed scanners are sometimes eliminated in favor of less costly inline scanners in cheaper machines.

Thus, you should carefully consider which features you really require in your printer. If your greatest priority is producing large numbers of high-quality black-only printouts, it's likely a dedicated laser printer will work best. But, should you require a unit that can send/receive faxes, produce occasional high-quality color photos and scan odd-sized documents, an inkjet-powered all-in-one with a flatbed scanner (to accommodate the odd-size documents) and fax capabilities is likely required.

All-on-one printers help save space by combining several devices in a single piece of equipment; occasional quality sacrifices may result, however

Print/Scan Quality

Not all printers and multifunction devices are created equal. The quality of both scanned and printed items vary widely by manufacturer and model.

Manufacturers frequently measure their machine's quality using variables that reflect best upon their product. In the case of printed page performance, most manufacturers count the number of draft—or lower quality—pages the machine can produce in a minute. Since a print job's first page takes the most time to complete, many manufacturers, when listing performance specifications, list the subsequent number of pages the printer generates *after* the first page is completed.

Fortunately, several aspects of print and scan quality can be effectively compared between models. Print resolution is typically measured in dots per inch, or DPI. The higher the numbers, the better.

Inexpensive inkjet models usually generate black-only prints at least as high as 600x600 DPI. Color models, meanwhile usually start as high as 4800x1200. Laser jets, meanwhile, typically produce 1200x1200 DPI or better black-only prints and 1200x600 or better color prints.

Scan quality is measured using both bit-rate and DPI measurements. If scanning is an important feature, seek an all-in-one device that offers optical scan resolutions of at least 600x1200 DPI and at least a 24-bit scan rate. Again, higher numbers are better (a scanner that boasts 36- or 48-bit technology will produce even higher-quality scans).

Be sure to consider the differences between an inline scanner, in which 8.5-inch x 11-inch pages are easily scanned by passing them through a sheet feeder, and a flat-bed scanner, in which odd-size documents can be easily scanned just by placing them on the glass. In environments where multiple-page documents will frequently be scanned, ensure you select a model that boasts an automatic feed tray.

Some printer aspects are difficult to compare; print and scan resolutions, however, are usually objective measurements

Network Capability

In the past, many home office users and even small businesses purchased a printer, connected it to a single PC and went to work. The popularity of peer-to-peer, client-server and wireless networks, however, has encouraged printer manufacturers to add network capabilities to new models.

Gone are the days of printers that can only be connected using a parallel cable. In fact, most new PCs (especially laptops) have eliminated parallel ports in favor of USB connections, which is now the standard supported by most every small office printer. In some cases, even USB printer connections are being

eliminated (or at least reduced) in favor of 802.11, Bluetooth and/or Ethernet connections.

802.11 WLAN Notes:

When selecting a WLAN-capable printer or multifunction device, be sure the model you select supports your office's WLAN standard. Many wireless networks utilize the 802.11g standard, while others are moving to the new (and improved) 802.11n standard.

Many printers now boast integrated wireless LAN connectivity. Other models feature embedded network interface cards, making it possible to connect printers to a local area network via a standard wired Ethernet cable, and thereby usable by multiple PCs simultaneously. Still others feature integrated Bluetooth support, which makes it possible for laptop users (among others) with Bluetooth functionality to print wirelessly without the requirement that a local area network even be present.

When reviewing a printer or multifunction device purchase, be sure to consider your organization's needs. If multiple users will need to access the printer or all-in-one's scanning functions, network-equipped models can eliminate the need to purchase multiple units or configure a single PC to host print services for other systems. If many users access the local area network wirelessly, be sure to consider a printer model that also includes WLAN connectivity.

Many printers and all-in-one devices now include WLAN, Ethernet and even Bluetooth connectivity

Duty Cycles

Different printers, of course, are designed for different purposes. Some models are designed to produce a few hundred color pages per month. Others may be designed to process hundreds of thousands of one-color pages annually.

Manufacturers design printers accordingly. From paper tray capacities to roller mechanism life spans to the amount of ink stored in inkjet or laser cartridges, it's best to match a printer to your office's production needs.

One consideration to remember is inkjet cartridges are less expensive than their laser cartridge counterparts. But laser cartridges produce exponentially more pages than do inkjets'. Therefore, in high volume environments, less time will be spent sourcing and replacing cartridges with a laser printer.

The same consideration should be given to paper trays. Organizations that print thousands of copies a month should opt for often optional large trays that can be added to the many tabletop and desktop models.

Review duty cycle, and estimated monthly print volumes, carefully. Almost all publishers list a model's monthly duty cycle rating within its technical specifications on their Web sites. A printer that's built for 25,000 or more pages a month will perform much better, over time, in an office that consistently prints 15,000 to 20,000 pages a month. Such a printer is likely to boast a longer life span, as well. Deploying a printer designed for a maximum of 10,000 pages per month, however, could quickly wear a machine out at that capacity (making a machine with greater capacity a better long-term investment).

*Most manufacturers
list printers' monthly
duty cycle ratings on
their Web sites*

OS Compatibility & Driver Support

Increasingly, Macintosh systems are appearing within offices of all sizes. Apple's market share, particularly among laptop computer users, has risen

Driver Notes:

Don't assume Windows compatibility means a printer will work with your Windows PCs; confirm your version of Windows (2000/XP/Vista) is supported. The same is true for Apple OS X users (a driver written for Mac OS X 10.5 may not work for Mac OS X 10.3 users).

dramatically. Some organizations are even experimenting with or deploying Linux and UNIX systems, as well.

Unfortunately, many printers don't work with all of these operating systems. While support for Macintosh computers seems to be increasing (Brother, Canon, Epson, Hewlett Packard and Lexmark are among the manufacturers that frequently publish drivers for Mac OS X), Linux and UNIX drivers are less widely available.

*Whether Using
Windows Vista, Mac
OS X, or another OS,
ensure the model you
select proves
compatible with your
systems*

When reviewing potential new printer solutions, review the operating systems specific models support. Don't assume the model you purchase supports the operating systems in use within your office. This is true even if your office uses only Windows. Many printer models feature drivers for Windows XP but not Windows Vista. Thus, before completing a printer purchase, confirm the model you purchase supports the necessary platforms.

Decision Making Checklist

While no product selection map is fool proof, you can use the following guidelines to help plan your next printer purchase:

- If the printer must produce more than 5,000 pages per month, consider a laser-powered unit with a paper tray that holds at least a ream of paper.
- When photos must be regularly printed, particularly on photo-sized papers, select a photo printer.
- When copy, fax and scan features are required, select an all-in-one printer.
- When only black pages must be printed, forego unnecessary features and select a simple one-color printer.
- When network connectivity is required, ensure the model you select includes either an integrated Ethernet port or WLAN connectivity.
- When odd-size documents must regularly be scanned, ensure the model purchased includes a flat-bed scanner.
- When numerous multi-page documents must be regularly scanned or faxed, ensure the all-in-one printer you purchase includes an automatic sheet feeder.
- If print speed is important (if numerous multiple page documents must frequently be printed quickly), opt for a laser printer.
- Confirm the printer model you purchase supports the operating systems in use at your office.

Still have questions? Contact your local Computer Troubleshooters office for assistance selecting and installing printers that best meet your needs. Visit www.computertroubleshooters.com to locate your local Computer Troubleshooter.