

***Laser Printer and MFP
Total Cost of Ownership,
Service and the Environment***

**The key to a successful printer and MFP
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whole-of-company costs**

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With the dramatic growth in graphical printouts and no end in sight to the paperless office, savvy CTOs and CFOs have begun looking at more than just the sticker price of the printer and Multifunction Product (MFP) they purchase. The total cost of owning a printer or MFP is more than the purchase price: running costs, environmental impact, staff ergonomics and support contracts are becoming increasingly important in respect to laser printer and MFP fleets.

This paper is intended to help businesses small and large to ask the right questions when buying a printer or MFP. Getting the right information at the time of purchase can save your business money and headaches.

The key to a successful printer and MFP purchase is to look at the whole-of-life and whole-of-company costs. There has been a lamentable tendency on the part of IT departments to look at the initial purchase cost of a printer and MFP only. Since the cost of running the printer and MFP is often largely hidden away in departmental budgets, an IT department only sees the initial capital expenditure.

Consequently, we see purchasing decisions being made that actually hurt the company as a whole. Where the IT department looks purely at specifications (for a printer and MFP's suitability to task) and initial purchase cost, the other departments may have to live with printer and MFPs that have high running costs, require many time-wasting user interventions and produce a lot of office waste that's harmful to the environment.

As we move towards more graphics-intensive printing, it is becoming even more imperative to look at the total cost of running a printer and MFP. According to Gartner, printer and MFP supply budgets are growing at 20% to 40% per year, partially as a result of printouts from Web pages and emails, often in colour. With this kind of growth, the cost of running the printer and MFP becomes an even more significant component of its total cost.

To help you make the right decisions when buying a printer and MFP, we've broken down this paper into two sections. The first covers the three common questions that IT purchasers ask when buying a printer and MFP. These questions are important, but often printer and MFP buyers end the conversation there. The second part of the paper details five other questions you should be asking, covering issues that, if investigated properly, can help a business save thousands of dollars over the life of the printer and MFP and help the environment as well.

The common questions

1. How much does it cost to buy?

It's often difficult for small and medium businesses with limited capital expenditure budgets to look beyond the initial purchase price of a given piece of technology. In businesses that live and die by their cash flow, a typical approach is to buy the cheapest product that meets the minimum requirements for a given task.

This is particularly prevalent in the printer and MFP industry, in which many vendors have acted as loss-leaders in order to maximise long term profits. They employ the "razor and blades" business model: the initial hardware is frequently sold cheaply – even at a loss – in order to lock in future sales of high-priced toner, printing drums, paper and other consumables.

What many businesses don't realise, or ignore in order to minimise the initial capital expenditure, is that feeding and maintaining the printer and MFP over its lifetime is going to cost many times more than the initial purchase cost. The total cost of ownership of a printer and MFP (the TCO) is a combination of its purchase price, consumables, space used, maintenance costs and human factors such as training time, management and even the amount of time spent waiting for prints to finish.

Kyocera's approach is a little different to that of other vendors. With its ECOSYS Technology and other advanced techniques, Kyocera has focussed on reducing the cost of a printer and MFP over the lifespan of the device. Its approach is to use fewer consumables and produce less waste – an approach that simultaneously helps the environment and reduces ongoing costs.

2. How fast is it?

A printer and MFP's output speed is usually near the top of its specification sheet, and is often used as a gauge of a printer and MFP's suitability-to-task for different workgroup environments. That is, the faster a printer and MFP is, the more suitable it will be for environments in which multiple users are competing for printer and MFP time.

Rated print speeds can be deceptive, however. It's important to note that the print speed listed in any printer and MFP specification is usually an indication of the raw speed of the printer and MFP engine, and often not a reflection of the speeds that will typically be achieved in real-world scenarios. Warm up and image processing times are often a bigger component of the overall print times than actually feeding the paper through the print engine and applying toner or ink. This is especially true of short-run print jobs.

If speed is a major concern, it's often a good idea to get a printing demonstration of a standard document from each vendor under consideration, and time how long it takes for the first page to come out, as well as how long the entire print job takes.

3. What's the print quality like?

Much like print speed, the resolution of a print engine tends to sit near the top of its spec sheet. As graphics printing becomes more prevalent, this figure is becoming more meaningful, but the majority of prints are still text. A 300dpi print of text on a laser printer and MFP is nearly indistinguishable from a 600dpi print.

Some laser printer and MFPs, including many of Kyocera's range of printer and MFPs, have also introduced a draft mode – a useful feature since a considerable proportion of a company's printouts tend to be for private reference and often end up as waste. A draft mode can be used to save 50% or more in toner costs.

The 5 important questions

1. How much does it cost to run?

For a small or medium business, this is perhaps the most important question you can ask when buying a new printer and MFP. Over the lifespan of the printer and MFP, the cost of replacing consumable items will be greater than the purchase cost by an order of magnitude.

It's not uncommon for the cost of consumables over the life of a laser printer and MFP to be four or more times greater than the initial purchase cost, especially as more and more companies move to colour and graphics-heavy printing. Toner and drum replacement is typically the largest component of the TCO of the printer and MFP.

There are three things you should look at when trying to determine the cost of consumables over the lifespan of the printer and MFP:

- The number of consumables

Depending on the model, the manufacturer and style of printer and MFP, the number of consumables a given laser printer and MFP requires can vary considerably. Some colour laser printer and MFPs have been known to have up to eight different components that require periodic replacement, including the four toner cartridges, the OPC drum, fusing oil, waste toner collector and transfer belt.

For the purpose of minimising TCO, look for a printer and MFP with long life components and high yield toner. All laser printer and MFPs will require toner replacement, but the life of components and toner yield varies by model. Some printer and MFPs – including Kyocera's entire range of laser printer and MFPs – even have drums that typically last the lifespan of the printer and MFP, and may never need to be replaced. Using Kyocera's ECOSYS Technology, the only thing that regularly needs to be replaced in a Kyocera printer and MFP is the toner cartridge (or cartridges, in the case of a colour printer and MFP). It is this fact, more than any other, which gives Kyocera its advantage in terms of TCO.

- The lifespan and cost of consumables

Not all toner cartridges and drums are created equal. Buyers are sometimes lured by the prospect of low-cost consumables, only to

find that the component needs to be changed with unacceptable frequency.

The good news is that most printer and MFP vendors now have comparable usage models, which makes lifespan comparisons far easier than in the past. Typically, consumable lifespans are listed in standard (A4) pages with a given percentage of coverage. For example, a toner cartridge may have a listed lifespan of 6,000 pages at 5% coverage. Five percent is considered a good average for typical text-based printing. Users with heavy graphics requirements may, however, see lifespans that are considerably shorter than advertised. Printing out graphics-heavy Web pages may, for example, may require as much as 30% coverage of the page.

It has also become common for printer and MFP vendors now to offer multiple versions of the same component. For example, the vendor may offer a low-yield and high-yield toner cartridge for the printer and MFP. Buying higher yield cartridges tends to be considerably more economical.

- **Media costs**

The other factor to be considered is the cost of media, especially if the choice is between an ink or dye-based solution and a laser (toner) solution.

Typically laser printer and MFPs will operate on low-cost plain paper, while ink and dye technologies often require expensive specialised papers, especially for high-quality colour printing. The average cost per page of the media is a major consideration when considering the TCO of a printer and MFP.

The availability of duplexing equipment is also worth considering in order to minimise media costs. A duplexer allows a printer and MFP to write to both sides of a sheet of paper without requiring a user to manually flip the pages over. Duplexers are available for most workgroup laser printer and MFPs, and some models even come with them by default. Most typical office printing tasks can make use of duplexing, effectively halving the cost of paper and minimising paper waste.

A useful method of determining the TCO of a printer and MFP is to work out the cost per page. Divide the price of each consumable component (toner, drum, waste toner bottle etc.) by the number of pages in its page yield. Add up all the results, add media costs, and you have a cost per page.

For a typical mono laser printer and MFP, with only the toner cartridge and drum as consumables, the formula would look something like this:

$$\frac{\text{**Toner cartridge cost** + \text{**Cost of OPC drum** + \text{**Cost of media**}}{\text{**Cartridge page yield** \quad \text{**Page yield of drum**}} = \text{**Cost per page**}$$

To help you with the calculations, Kyocera’s Australian web site has a pre-built TCO calculator, with a variety of printer and MFPs from all the major vendors already pre-calculated. At <http://www.kyocera.com.au/tco.asp>, you can take a look at what the major vendors are offering and perform a quick TCO analysis by entering the model of printer and MFPs you’re interested in comparing and the expected duty and lifecycle of those printer and MFPs.

	HP Laserjet 9500n	Kyocera FS-C8026N
# compared	5	5
Monthly Volume	4000	4000
Hardware cost	\$66,000	\$41,245
Monochrome Consumables	\$47,271	\$28,979
Monochrome Coverage	10%	10%
Colour Consumables	\$33,198	\$17,871
Colour Coverage	10%	10%
% of total printing in colour	10%	10%
Maintenance	\$10,490	\$6,156
TOTAL	AUD\$156,959	AUD\$94,250

Figure 1. A sample of the output of the Kyocera TCO calculator. It compares the cost of five printer and MFPs over a five year life with a 4000 prints/month duty cycle.

2. What kind of service does the supplier offer?

Particularly for larger business, the service and support offered by the printer and MFP manufacturer should be a major factor in any purchasing decision. When a printer and MFP breaks down, you need to know whether you can get someone there to fix the problem before downtime becomes a major drain on productivity. Key questions to ask of your supplier include:

- Is there a support line for the product?
- What hours is service available?
- What's the average response time in your particular area?
- What kind of training do contracted repair men receive?
- Will the warranty cover the expected lifespan of the printer and MFP?

Warranties can be difficult to factor into total cost figures, because their application is unknowable. Warranties act as a safety net, a method of mitigating the risk of expensive unplanned maintenance which can severely impact the TCO.

3. How much user-intervention is required?

As the saying goes, time is money. You know the scenario: a worker goes to the printer and MFP to retrieve his or her printouts, only to find that the toner cartridge or drum is out and there's a serious backlog of print jobs waiting. The office co-ordinator is called in to replace the cartridge (and a replacement may or may not be on hand), and when the cartridge is replaced everybody with a print job pending sits around twiddling their thumbs waiting for the queue to complete.

The more time spent by staff filling paper trays, changing toner cartridges and drums, ordering replacement supplies, dealing with waste and standing around waiting for prints to finish, the less real work gets done.

Longer life consumables will reduce the cost and number of human interventions, much as they reduce the purchasing cost of consumables. Large paper trays and expansion options also help to reduce the number of human interventions required to keep the printer and MFP chugging.

A printer and MFP solution with an integrated and powerful monitoring and logging tool – such as Kyocera’s KM-NET Viewer – can smooth over the issues related to supply management and help IT managers be pro-active when it comes to printer and MFP management.

4. How much power does it use?

Power usage is one of the hidden costs of running a printer and MFP. It hurts both the environment and the bottom line to run a printer and MFP or printer and MFP fleet that sucks up an inordinate amount of electricity.

Energy Star compliant printer and MFPs are a good place to start. Energy Star is an international standard for the development of energy-efficient office equipment and consumer appliances.

In respect to printer and MFPs, Energy Star compliance mandates a maximum sleep mode power usage depending on the type of printer and MFP, and a minimum time to sleep mode. For example, to be Energy Star compliant, an A4 18ppm printer and MFP must have a sleep-mode power usage of less than 20W and enter sleep mode within 15 minutes. For more on Energy Star, visit <http://www.energystar.gov.au/products/printtech.html>.

Printer and MFP manufacturers should also list the power consumption of their printer and MFPs, both at stand-by and while printing. Perform a quick comparison of power usage, recognising that the majority of the time the printer and MFP will remain at idle (during the evenings etc.). Some printer and MFPs (including Kyocera printer and MFPs) also feature a power economy mode, in which they go into a lower power state than even sleep mode. In some cases, power usage in this mode is negligible.

5. What kind of impact does the printer and MFP have on the environment?

Getting a low-power printer and MFP is not the only way to help the environment – including the office environment. Minimising and recycling waste, and buying a printer and MFP with low noise output help you to produce a better ergonomics for staff and limit the amount of landfill your business produces.

Some printer and MFP manufacturers (including Kyocera) will list the noise output of their printer and MFPs. This should be based on ISO 7779 measurement and be listed in decibels. The printer and MFP manufacturer should detail both idle and printing noise output. To give you an indication of comparative noise levels, 30 decibels is about the sound of a quiet whisper from a metre away, 50 is about the noise level you might experience on a quiet street, and 70 about the volume of noise inside the cabin of an aircraft during normal cruising conditions. We don't recommend printer and MFPs that make much more noise than this.

Of course, specs are one thing and reality is often another. If possible, get a demonstration of the printer and MFPs being considered for purchase and consciously note the amount of noise they make.

In respect to waste and environmental health, it's a good idea to investigate what the printer and MFPs and (especially) consumables are made of and disposed of. We're proud to say that Kyocera leads the way when it comes to environmentally friendly printer and MFPs. Every component of a Kyocera printer and MFP is designed with the green office in mind. Some of Kyocera's initiative include:

- Long Life components. Kyocera has drums that last over 200,000 (and sometimes up to 500,000) prints. Typically, the only thing that has to be replaced on the printer and MFPs are toner cartridges, and these can be recycled.
- Kyocera has implemented a manufacturing process that uses no lead in either the soldering or components.
- ECOSYS toner cartridges are made of a single substance and ID coded for easy recycling.
- A free waste collection service called KyoCollect. Waste toner cartridges, fuser units and other consumables will be picked up and taken away by Kyocera free of charge for businesses in metropolitan areas. These collected consumables will be recycled or disposed of by Kyocera.
- Plastics that don't release toxic gasses when incinerated.
- Packaging that uses no dyes and is fully recyclable. Even packaging supports are made from pulp mould.
- Low ozone emissions on all Kyocera printer and MFPs.

About Kyocera

Kyocera Corporate Background

Kyocera was established in Japan in 1959. The company pioneered the use of fine ceramics as an alternative to steel and plastics. It has also developed market leadership in semiconductors, telecommunications hardware, optics, electronics, metal processing, automotive components, medicine and solar energy. With 40 manufacturing plants, Kyocera has more than 60,000 people employed in 25 countries all around the world.

Kyocera Australia

Kyocera set up its head office in Sydney in 1990 with branch offices in Melbourne, Perth and Brisbane. The company received Government Endorsed Supplier Status in 1994. Renowned for its pioneering efforts in TCO (Total Cost of Ownership) and commitment to the environment, Kyocera provides leading-edge laser printer and MFP solutions for Australian business and consumers. Kyocera has experienced strong growth and success in the Australian laser printer and MFP market, becoming the second most popular choice for laser printers in Australia.

Mita Australia

Mita established its head office in Sydney with branches in Queensland and Victoria. The company had 15 years experience with NSW Government contracts and a vast country dealer network. Mita's advanced copier technology saw the brand used in many areas of Australian Government and business.

Kyocera and Mita merge

Kyocera acquired the global copier manufacturer Mita Corporation early in 2000. The international integration of business operations commenced with the merger of the two companies in Australia in October 2000. The integration of the Australian division of the company, now known as Kyocera Mita Australia, was the first phase of a global restructure, which has accelerated the convergence of networked document management systems. Kyocera is now poised to consolidate its position as a world leader in document imaging technology in networked environments.

Kyocera - A Technological and Environmental Pacesetter

ECOSYS (Economy, Ecology and System) Technology. Kyocera pioneered cartridge free printing that reduces both the cost of consumables and waste. Industry and product surveys consistently show that Kyocera printer and MFPs are up to 40% cheaper to operate than comparative models. The company's award-winning ECOSYS laser printer and MFPs have the lowest Total Cost of Ownership (TCO) and cost per page available on the market. Through savings on consumables alone, most consumers can recover the original capital cost of the printer and MFP in the first year of printing.

Commitment to the Environment

Our Corporate worldwide green policies encourage conservation and recycling, along with the development of products and technologies that can actually minimise the impact on the environment. The Kyocera Eco-Product label is carried on these products. In 1991 Kyocera implemented its Environmental Charter worldwide. The company has received accreditation from numerous conservation organisations including: Green Seal (USA), Blue Angel (Europe), Ecomark (Japan), Qualidate Ambiental (South America). Our products are all Energy Star compliant.