ThinPrint®

Reduce Printing Costs
The Pull Printing Approach

ThinPrint

White Paper

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Executive Summary

Current situation: **Printing today - Maximum printing costs, maximum effort**
Even in the digital age, printing costs continue to place a significant burden on IT budgets. Savings that can be made in the area of printing are often not taken into consideration. Increasing shares of budgets are being allocated to the growth in IT infrastructure and enhanced digitization. The tradeoff is that there is less and less budget available for the maintenance of existing infrastructure, such as the printing environment. By optimizing printing costs, IT administrators can free up budgets for investment in other areas, without negatively impacting the quality of printing processes.

Problem: **The printer as a cost driver**
Many factors in the printing process are unnecessary or avoidable, but which also drive costs higher. These include erroneous printouts resulting in wasted paper and toner as well as general hardware wear and tear. Printer management is further complicated through decentralized printer environments (lack of driver free printing, multiple printer queues) and IT departments may be swamped by printer related helpdesk calls. The majority of print optimization measures relate to special conditions for basic services such as maintenance and support or procurement of equipment and consumables such as paper and toner. The challenges mentioned above however, are not eliminated as nothing changes with the basic print infrastructure. If a print management solution is chosen, then these solutions often require costly additional hardware purchases and a commitment to one specific printer manufacturer.

Solution: **User-authenticated printing**
With user-authenticated printing, also known as pull printing, savings of at least 10% can be gained. An additional bonus is that the printer environment dramatically improves and the above mentioned cost drivers are also eliminated.

Result: **Minimized printing costs, minimized effort**
Personal Printing is ThinPrint's pull printing solution which can be implemented fully independently of printer model and manufacturer. This on-premise solution already generates a return on its investment in its first year. All the more impressive when other solutions require a number of years before generating a positive ROI, as a result of the costly investment in additional hardware.

Printing Today: Maximum Printing Costs, Maximum Effort

Printing places a significant burden on IT budgets. Even in the digital age, printing causes costs of up to 3% of turnover.

In the days of smartphones, tablets and laptops, the focus of end users on printing may not be as high as before. In the corporate context however, the opposite is the case. Viewing on a monitor is often insufficient or the contents of a document can be more easily absorbed when reading from paper. Again and again, employees still cannot resist the urge to print files. "The concept of the "paperless office" first appeared way back in 1975, when an article in BusinessWeek predicted that offices would be entirely digital by the mid 1990s. Obviously, that didn't happen. In fact, in those 20 years, paper use increased rather dramatically in North American offices. New technologies like e-mail and the internet actually had office workers printing more, not less."[1] Printing is typically the third-highest cost factor for companies after rent and wage costs.[4] Therefore, it is fair to say that printing costs continue to account for a company's highest monthly expenses. IDC research shows that when you look beyond the obvious, the total cost of printing is typically one to three percent of revenue, with potential for up to 30 percent cost reduction[2] This places significant constraints especially on the budget of the IT department.

According to Gartner, for 2013, CIO IT budgets are projected to be slightly down, with a weighted global average decline of 0.5 percent.[3] Digital technologies dominate CIO technology priorities for 2013. The top 10 global technology priorities reflect a greater emphasis on externally oriented digital technologies, as opposed to traditional IT/operationally oriented systems.[4] This results in an investment bottleneck for existing infrastructure with the majority of IT investment flowing into the areas of new mobile devices, big data, telecommunications services, cloud computing, social business tools and apps. Ultimately, there is less available capital for maintenance of the existing infrastructure (of which printing is an essential element).

When taking a look at printing costs, it sometimes can appear to be a black hole. It is difficult to determine how much costs really add up to. There are five cost areas not always perceived as print-related, that really are. They are larger than the obvious costs and offer significantly more scope for savings: Organizational productivity, procurement and administration, environmental sustainability, IT service desk, storage and office space.[5] It makes sense to first analyze the costs and then in the next step, think about possible solutions.

1 Amy Westervelt. Forget the paperless office: Here's how to get a less-paper office
  http://www.greenbiz.com/blog/2012/05/07/forget-paperless-office-heres-how-get-less-paper-office
  (May 07, 2012)
2 Ray Morgan Company; Shocking Office Printing Stats You Need to Know!;
  http://www.raymorgan.com/shocking-office-printing-stats-you-need-to-know/ (April 2015)
3 Graziano, Dan: Gartner cuts global IT spending growth forecast in half as PC sales slump.
  http://BGR.com/2013/07/04/Gartner-worldwide-it-spending-2013/ (23.09.2013).
4 STAMFORD, Conn.: Gartner Executive Program Survey of More Than 2,000 CIOs Shows Digital Technologies Are Top Priorities in 2013 http://www.gartner.com/newsroom/id/2304615 (January 16, 2013)
5 Conrad Mills: Do You Have the Full Picture? The Five Hidden Costs of Enterprise Print http://realbusinessatxerox.blogs.xerox.com/2013/05/10/do-you-have-the-full-picture-the-five-hidden-costs-of-print/#.UlfOyxCAklo (May 10, 2013)

The Printer as a Cost Driver.
An Analysis of the Problem.

Many unnecessary costs are probably already well known to any IT professional. Nevertheless, it is worth to take a closer look at what causes these costs. To name just some, there is the all too familiar problem of uncollected pages blocking up output trays. According to surveys, approximately 7 pages per employee end up being disposed of each day.[6] This is paper and toner wasted and which must be reordered constantly. At the same time it increases wear and tear on the hardware used. Another cost factor is the purchase and administration of expensive single-workstation printers for business units dealing with sensitive data such as HR, finance and legal departments. Printer issues are often one of the most common problems that users experience.[7] Mainly through decentralized spooling and the resulting manual assignment of printer queues, IT administrators end up spending an over proportional amount of their time solving these problems.

In addition, IT departments must arrange costly maintenance contracts involving fast reaction times with printer manufacturers. The reason for this being that unless a defective printer is repaired immediately, employees are often unable to complete their tasks, or at least not at the level that is expected of them. As print jobs are processed by priority queues and are limited to using a standard printer, the effects on user productivity cannot be underestimated.

6 Paper waste on the increase. http://www.Lexmark.com/en_GB/about-us/Newsroom/news-releases/2010/16-04-paper-waste-on-the-increase.shtml (30.09.2013).

7 Ray Morgan Company; Shocking Office Printing Stats You Need to Know!; http://www.raymorgan.com/shocking-office-printing-stats-you-need-to-know/ (April 2015)

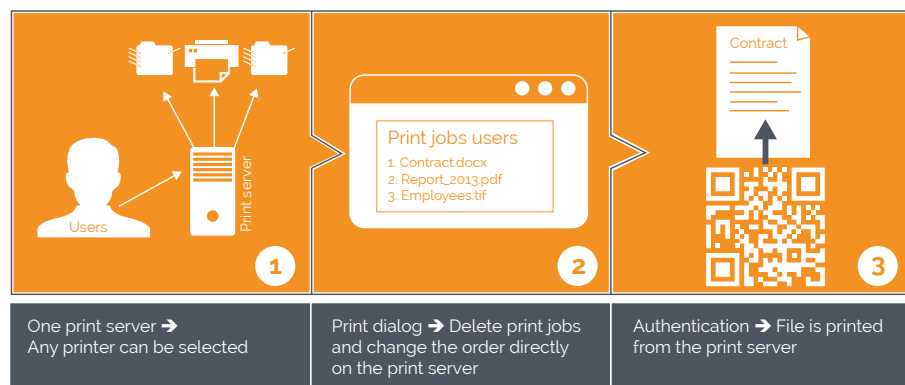A summary of the factors which trigger increased costs:

- Unnecessary usage of consumables (paper and toner) due to printing errors
- Increased overhead for IT departments through complicated printer management and helpdesk requests
- Expensive maintenance contracts with short reaction times
- Loss of productivity and efficiency through multiple printer queues
- Expensive single-workstation printers for business units working with security-relevant data

User-authenticated printing, also known as pull printing, offers an innovative and cost-effective solution for overcoming the challenges mentioned above.

User-Authenticated Printing as a Solution

User-authenticated printing, also known as pull printing, allows significant reductions to be made to printing costs. Pull printing has been in use since 1997, but the solution has not been widely adopted. The reasons for this are that businesses fear the high investment and installation costs that are thought to be associated with the technology. When it comes to user-authenticated printing, what first comes to mind is more likely to be the security aspects, rather than the cost aspects.

Basically, a pull-printing solution works on the principle that the user has access to a print server. The printer which is then used does not have to be the default printer defined by the administrator, but can be any shared network printer that the user selects.

One print server ➔ Any printer can be selected	Print dialog ➔ Delete print jobs and change the order directly on the print server	Authentication ➔ File is printed from the print server

When the printing process is initiated, a list of the user's outstanding print jobs can be viewed. Print jobs that were incorrectly initiated or that are no longer required, can be deleted from this list. This can either be done by the user or automatically by the system after a time period set by the administrator (e.g. all unprinted print jobs can be deleted 24 or 48 hours after being initiated). Users of pull printing solutions report savings of at least 10%, and in some cases up to 40% of the total print jobs because they were either deleted by the users or the system.[8]

8 McNee, Sharon/Weilerstein, Ken/Mitani, Tomoko: Cost-Cutting Initiatives for Office Printing, in: Gartner Research Note (Juli 2013)

Pull printing central-izes printing. Any network printer is available for the employee, who uses simple QR code scanning and a smartphone as a method of authentication.

The print job is initiated and the user now wants to collect the actual printout. The user now has the option to use any network printer in the company. If the print-er selected is defective, or currently in use, the user can simply choose another printer. This does not necessarily have to be in the immediate location, the printer may be on a different floor, in a meeting room, or even in a separate building. The user simply authenticates directly at the printer that he wants to use, for example with a smartphone scan of a QR code attached to the printer. The print job is then printed. This not only ensures that printing is kept to an essential minimum, but also has the added benefit that printouts cannot fall into the wrong hands, signifi-cantly increasing security within the organization.

If pull printing is to be used to specifically reduce printing costs, then a solution is essential that does not require additional investment in hardware and that can operate on a cross-platform, manufacturer-independent basis.

Minimized Printing Costs, Minimized Effort

ThinPrint's pull printing solution is called Personal Printing and offers an uncompli-cated way to minimize printing costs. The application integrates seamlessly with the existing IT architecture and can be used immediately and regardless of the amount of different printer models in use. Personal Printing is used without re-quiring any significant investment, is fully scalable and generates a return on its investment within its first year of use. Central administration and use of driver free printing technology results in minimized administrative burden.
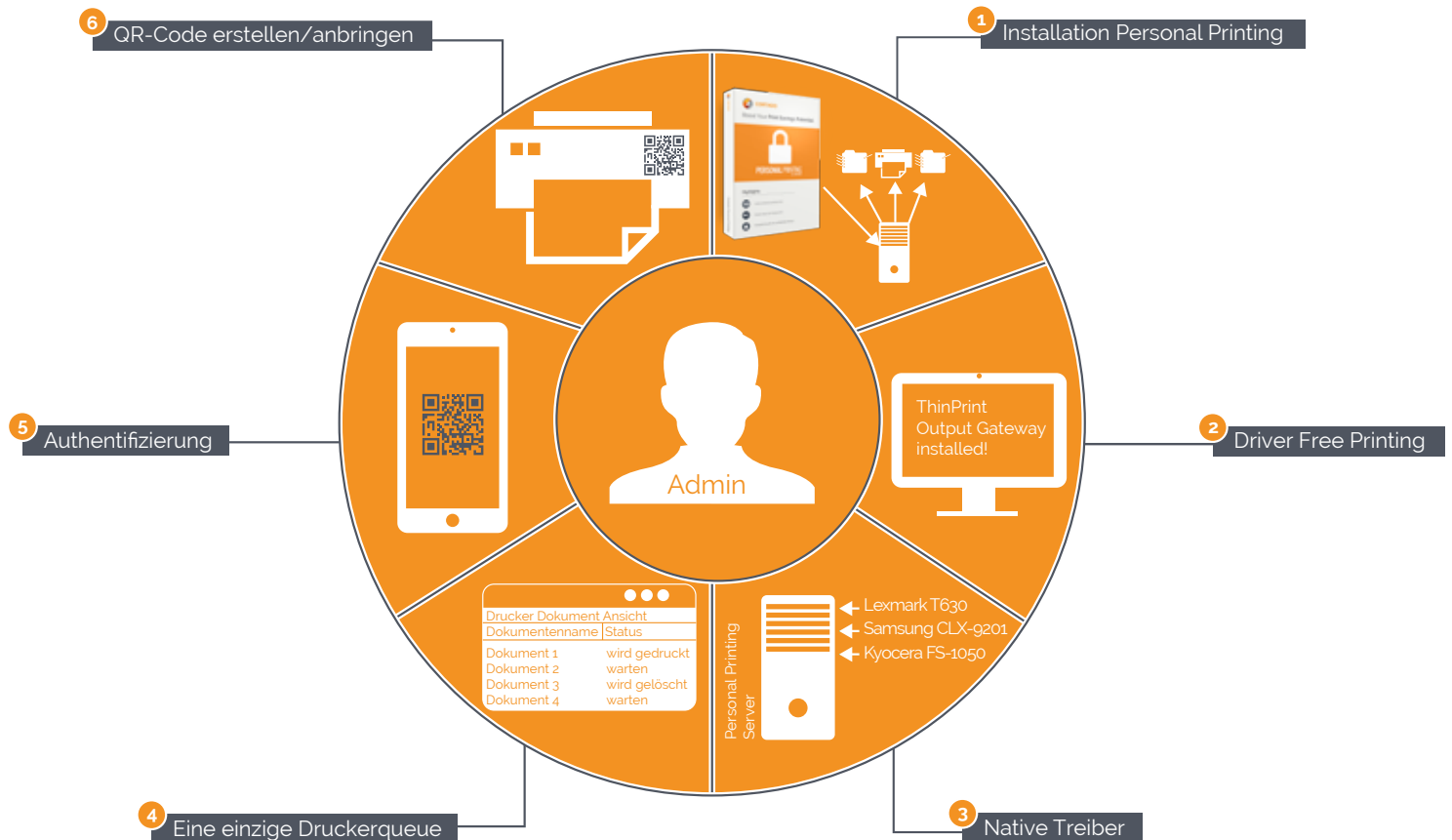
For the administrator, installation couldn't be easier:

Personal Printing re-duces printing costs by a minimum of 10%. No investment in hardware is required.

1. The administrator installs the Personal Printing software on the server, which net-work and local printers access. The server is then transformed into a Personal Printing server.

2. The Personal Printer and not each individual printer model is addressed by the client during the printing process. This is possible because the Personal Printer uses ThinPrint Output Gateway. This is a virtual printer driver that allows print jobs to be rendered on the server with the installed native or original printer drivers. Therefore, the only printer driver that must be installed on workstations, terminal servers, or virtual desktops is the ThinPrint Output Gateway.

3. All other native drivers are installed on the Personal Printing server. One of the main advantages of the resulting driver free printing is that a printout may be initi-ated from any workstation in the corporate network.

4. There is a central printer queue, which is no longer processed manually or auto-matically based on priority.

5. The user decides by authentication at the printer when the print job is printed. The easiest and most cost-effective method of authentication is smartphone and QR code authentication. Already, smartphones are in active use by more than 30% of employees in companies.[9]

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9 Carnelley, Philip/Dufft,Nicole/Rafal,Olivier/ Reichhart,Julia/Stiehler,Andreas: Mobile Device & Applica-tion Management in Germany, France, the UK, and Switzerland, in: PAC (September 2013)
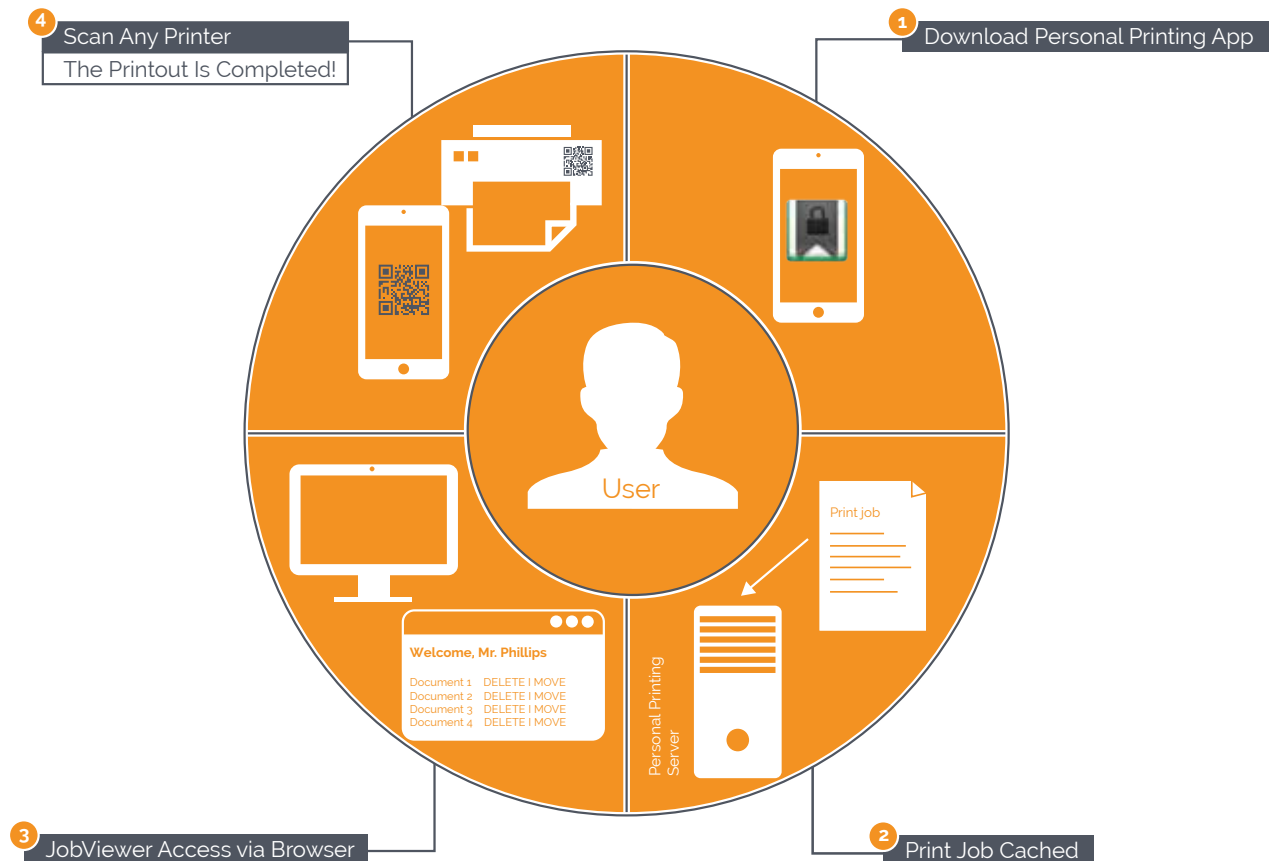
6. All that the administrator must do is to attach a QR code to the printer, purchase of additional hardware is not necessary and any QR code generator on the internet can be used. There, the admin simply enters the name of the printer and its printer ID using the following syntax: printer ID: printer name, e.g. 1: HP Color LaserJet 4700.

For the user, the process is as follows:

1. Joe Phillips, a sales manager, has downloaded the Personal Printing app to his smartphone and configured it accordingly.

2. While at his desktop, he wants to print out a cost calculation for an upcoming project. He prints just as always via CTRL + P or File -> Print.

3. His print job is cached in a user-specific directory on the Personal Printing server.

4. If Mr. Phillips wants to view his print jobs, then all he has to do is open the Job-Viewer in a browser. If required, he can delete unnecessary print jobs, or change the order in which they are printed.

5. If everything is OK for Mr. Phillips, then he can make his way to the printer. This may be the printer in the hallway of his department, a printer in a meeting room on a different floor where he is about to meet with colleagues or in fact any network printer in the company. He simply authenticates by scanning the QR code attached to the printer with his smartphone and the printer starts printing immediately.

4 Scan Any Printer
The Printout Is Completed!

1 Download Personal Printing App

User

3 JobViewer Access via Browser

2 Print Job Cached

Print job

Personal Printing Server

Welcome, Mr. Phillips

Document 1   DELETE I MOVE
Document 2   DELETE I MOVE
Document 3   DELETE I MOVE
Document 4   DELETE I MOVE

Cost Savings

According to a study by Gartner,[10] the introduction of a pull printing solution reduces paper consumption in a company by a minimum of 10%. On average, an employee uses 10,000 sheets of paper a year. The true cost of printing however is 13 to 31 times higher than the actual cost of the paper used. In numbers this means that one printed sheet of paper costs on average $0.07. For one year, the costs accumulate to approximately $650 per employee. According to a Lexmark study, 17% of the total print volume is unnecessary. With Personal Printing as a pull-printing solution, savings of at least 10% can be made each year. That equates to savings of $65 per user per year. The investment required is just $18 per user per year resulting in annual savings of $47.

As no further investment in hardware is necessary with Personal Printing, the savings mentioned above are net savings. This is what differentiates Personal Printing from other pull-printing solutions. ThinPrint is the only provider whose solution is completely independent of hardware from individual manufacturers, and its solution is the culmination of many years of experience in the areas of mobility and mobile printing.

Average printing costs per user, per year:	$ 650
Minimum cost savings with Personal Printing (10%):	$ 65
Personal Printing license per user, per year:	-$ 18
Net savings per user, per year:	**$ 47**

10 McNee, Sharon/Weilerstein, Ken/Mitani, Tomoko: Cost-Cutting Initiatives for Office Printing, in: Gartner Research Note (Juli 2013)

Roundup

Despite businesses operating in a digital world, printing is actually increasing in enterprises.[11] IDC research shows that when you look beyond the obvious, the total cost of printing is typically one to three percent of revenue, with potential for up to 30 percent cost reduction.[12] Digital technologies dominate CIO technology priorities for 2013. The top 10 global technology priorities reflect a greater emphasis on externally oriented digital technologies, as opposed to traditional IT/operationally oriented systems, with an ever larger amount being taken up by specialist departments.[13] The result is an investment bottleneck.

The majority of print optimization measures relate to special conditions for basic services. The following problems however, are not eliminated: Unnecessary consumption of materials, overhead for IT departments, expensive maintenance contracts, reduced productivity and efficiency and expensive single-workstation printers for departments with security-relevant data. These factors can be eliminated with an effective pull-printing solution. At least 10% and up to 40% of the cost of printing can be saved, for example with Personal Printing.

In summary, Personal Printing offers companies the following decisive advantages:

IT budget savings – Expensive maintenance contracts with fast response times are unnecessary. Reduced outlay for paper and toner. No additional hardware is necessary, and the solution is device and manufacturer independent. The acquisition of user-based licenses brings a return on investment in the first year of use.

Simplified installation and configuration – Only the Personal Printer must be installed as the single printer object on Windows devices. Especially the option of using smartphones for authentication makes getting the solution up and running extremely simple.

Easy management – With the central Personal Printing server, there is only one central printer queue, significantly reducing administration overhead.

Increased productivity through more flexibility – Through the free choice of printer, the user has far more options open to him then before. The JobViewer allows users to view their own print jobs and if necessary delete them from any workstation.

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11 SMBs: Are green campaigns missing the mark?. Lexmark International. 12 Februar 2012.
12 Output-Management bei BMW. Druckkosten um 30 Prozent drücken.
   http://www.cio.de/strategien/900181/ (30.09.2013)
13 Kröger, Kolja: 10 Gartner-Trends bis 2017.
   http://www.computerwoche.de/a/10-gartner-trends-bis-2017,2501630 (23.09.2013).

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What customers think of ThinPrint?
Independent, third-party research on how customers view ThinPrint products can be found at: **www.techvalidate.com/product-research/thinprint**

Any questions?
The ThinPrint experts are happy to help. Contact us via one of our local offices listed on the next page or send an e-mail to **info@thinprint.com**.

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