ThinPrint®

Achieve Complete Server Consolidation, **Cost Savings & Streamlined Print Management for Your Business**

ThinPrint

White Paper

Contents

Outline

Situation. **The inherent disadvantages of local printing without a print server**
Even though printing is not a topic close to an administrator's heart when setting up his IT environment, having no viable print concept offers no benefits. The disadvantages of local printing without an assigned print server are extremely significant, with the workload for administrators increasing dramatically, while the printing performance, and ultimately the employees' workflow, deteriorates. The only viable recommendation is to use dedicated print servers.

Problem. **Local print servers are cost-intensive to use and cause significant administrative effort**
However, the recognition that it is difficult to do without print servers brings its own problems. For companies with branch offices, retail outlets and field offices, it means that print servers have to be operated all over the place. This results in additional costs, and the IT administration workload for several sites is not reduced. Quite the contrary. Since in classic print scenarios, efficient processing via a central print server in the company headquarters is barely feasible, there is initially no alternative but to use local print servers.

Solution. **Server centralization is the recommendation, and what's more: It's possible as well**
The idea is to make printing as easy, cost-effective and efficient as possible. In this way you get the best of both worlds: You can dispense with local print servers and obtain the resulting financial benefit and, at the same time, you get the advantages of print management through a dedicated print server. This is aided by the features of ThinPrint, such as maximum print data compression and high printing speed, through streaming of print jobs and caching. Another decisive factor is that compression is now possible on all print channels thanks to ThinPrint 10. Not only that but, thanks to ThinPrint, printer drivers only have to be available at a single central location. Individual workstations are kept free of printer drivers.

Result. **Significant reduction in hardware, operating, energy and license costs**
With ThinPrint, the print server in the company headquarters is responsible for processing all company-wide print jobs, and there is absolutely no need for print servers in the individual branches. Central management of all printer drivers at one location makes administration significantly easier. IT know-how about printing is no longer required in the branch offices. At the same time, the central ThinPrint server eliminates driver problems, such as with 32/64 bit mixed environments. Users get one user interface for all printers, flexible print options and quick results with reliable quality.

1. The Disadvantages of Printing Without Servers

Originally, printing was organized on individual workstations. Even today, this is the case in smaller branches and field offices. There is no central print server here, with the result that the print services have to be provided separately by the individual workstations (PCs, Notebooks).

This situation results in the **following disadvantages:**

1. Central management of the print jobs and queues i**s not possible**.
2. It is difficult to administrate the printer drivers, e.g., in 32 bit/64 bit environments. This results in high **maintenance costs**.
3. Lack of transparency in relation to printer use, **performance, etc.**
4. The individual printers are put under great strain by processing print jobs sent at the same time, **they crash or only print part of the jobs.**

The costs and administrative effort are precisely why servers are being withdrawn from use in branch offices. And as there is apparently no alternative, printers and printer drivers are managed and controlled centrally and are distributed largely automatically. As a result, printer drivers are not kept separate from the workstations. Instead, an agent which is then responsible for downloading new drivers must be installed on the individual workstations.

The processing of print jobs is left to the workstations and printers again, but in many cases they are not up to the task. In addition, there is no entity to deal with spooling for reliable processing of print jobs from the different workstations.

To summarize, this means an increased IT workload and at the same time deteriorating printing performance, resulting in poor workflows for employees. The only viable recommendation is to use dedicated print servers. The advantage is that a central entity is available for management and spooling of all print jobs as well as for managing queues. Print job management means the print jobs can be processed neatly and in a prioritized order.

1.1 A Dedicated Print Server Offers Many Advantages

A dedicated print server helps to improve printing performance. The print server negates many of the disadvantages that are experienced by users of direct IP printer connections, which, for example, impose a heavy burden on the connection when printers are accessed simultaneously, and thus prevent quick printing.[1] Purchasing a central print server pays for itself in businesses with at least 30 employees.

The following benefits have resulted in a print server concept being implemented in many companies:

- The disadvantages of client-side printing, such as simultaneous access to a single printer by several PCs, are avoided. Print jobs are structured in a queue.
- Through the possibility of print job prioritization, printers are not overloaded with simultaneously released print jobs. This prevents incorrect or omitted printouts.
- The processing and prioritization of print jobs on the print server is accelerated through the use of the local print server. Employees can continue to work effectively without being restricted by excessively slow print processes.
- A high load on the network through network printing impairs performance and, in the worst case, can destabilize the entire system and result in the simultaneous failure of all services.

2. Extensive Use of Print Servers is Cost-Intensive and Time-Consuming

Even if server consolidation has progressed in recent years due to increased energy costs, performance requirements and reductions in IT budgets[2], the centralization of print servers has not yet followed this trend. In particular in companies with additional branches, no answer has yet been found to the question of how to do without print servers in branch offices.

And despite the advantages brought by print servers, we can't ignore the fact that the workload and costs incurred through the use of additional servers is increasing dramatically.

1 Microsoft Corporation: When to use a Print Server, no place of publication, 2004
2 http://www.computerweekly.com/news/2240212013/Consolidation-drives-down-growth-in-datacentre-spending

The **four** main components that make up the costs are:

- The actual hardware costs including energy costs
- The costs of the server operating system and the associated applications
- The administration costs (hardware maintenance, system maintenance, such as printer driver maintenance, continuous updating of printer systems)
- Additional HR costs on site

There are servers available that cost just over $1000/€750[1]. Whether or not these are sufficient in terms of user numbers, processor performance and memory capacity is something that must be checked critically according to the requirements in each individual case. Above all, you must take into account that the procurement costs make up only 15% of the total costs of a server. The remaining 85% of the costs are incurred through the additional staffing costs and the increased workload due to installation, maintenance and management of the server as well as updating the respective systems on the servers[2]. At the same time, license and energy costs stretch the budget. If you calculate all these components for your company, you will most likely be astonished at how high your costs are.

Simply fill out the fields below and you will see instantly how much money you spend each month on one print server.

Cost Item per Year	
Server hardware	
Server operating system licenses	
Staffing costs (staff costs for an IT administrator on site, per hour x working time spent on print server)	
Server energy consumption[3]	
Total	
Costs per Month (divide by 12)	

1 http://www.smallbusinesscomputing.com/buyersguide/article.php/10729_3887721_2/Buyers-Guide-How-to-Buy-a-Small-Business-Server.htm
2 http://www.webopedia.com/DidYouKnow/Hardware_Software/how_much_will_a_server_cost.html
3 http://www.webhostingtalk.com/showpost.php?s=5c585a0433f0b7e1ea8d59f51d6b1b2e&p=7464198&postcount=2

3. Server Centralization Answers Virtually All Your Problems

You don't want to miss out on **the advantages of a print server**, but at the same time, you want to reduce **costs for printer management.** In this way you get the best of both worlds: You can dispense with local print servers and gain the resulting financial relief and, at the same time take advantage of all the benefits of printer management through a dedicated print server. A central print server is the answer, e.g., in the data center of the company headquarters, but there are some obstacles on the way to achieving this.

3.1 Challenges Associated with Server Centralization

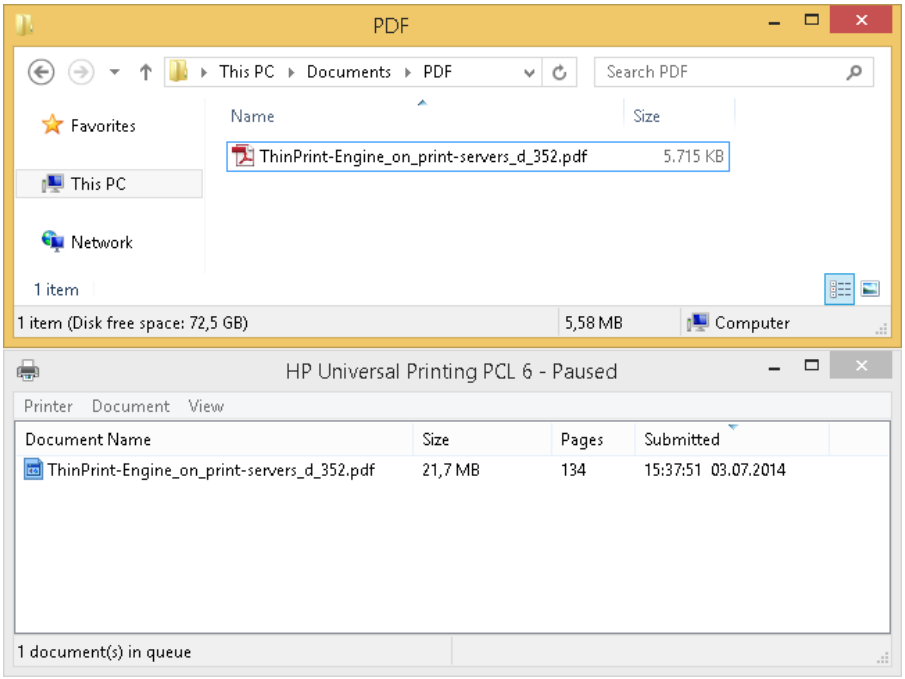
If it was easy to reduce all print servers to one central server, then every company would already have done so by now. But there are various challenges that make the whole thing more difficult.

SITUATION: Integration of branch offices

CHALLENGE: Size of print data

One problem when using central print servers is the local applications on PCs in branch offices, retail outlets, etc. The flow of print data is too large to be routed efficiently via one central print server. The spool and print data volumes increase exorbitantly during the printing process.

As you can see in the image below, the size of a sample **PDF document is 5,715 KByte**. Acrobat Reader XI and the print system then create a print data file of **21,7 MByte**. This is the print data ultimately used by the printer. After adding the protocol overheads, we get the actual burden caused to the network by a print job.[1]



1 To find out more about the reasons behind the print data size, download the free White Paper "Printing in the Wireless LAN – More bandwidth thanks to print data compression" from our website: http://bit.ly/1nNyJvV

That's why print servers are required in branch offices – to avoid sending large volumes of print data to the company headquarters via WAN. This ultimately causes additional costs and IT expertise on-site is required.

SITUATION: Virtual applications and desktops

CHALLENGE: Limited options with central print server

For many companies, another issue is virtual applications and desktops, which only have very limited scope for printing via a central print server. Problems can also occur due to the print data volume, as multimedia data is also transferred on virtual desktops. This multimedia data then competes with the large volume of print data on the way to the print server and on to the local printer, which could result in the session freezing locally, and long print queues occurring at printers.

4. Server Centralization is also Easily Achievable in the Print Area

Even if ThinPrint works in IT environments without a central print server and already brings many advantages, the recommendation of ThinPrint is to use a central print server.

Based on many years of experience with different IT landscapes, the software has been optimized and extended in such a way that optimal support can be offered for a central print server. In addition to the familiar functions, the last piece of the jigsaw - print data compression on all channels - has been added in the new ThinPrint 10 version (ThinShare), which means server centralization is easily possible in the print area too. This makes print servers in branch offices obsolete.

4.1 The Road to Complete Centralization, Thanks to ThinPrint

ThinPrint functions like streaming, SpeedCache, font management and compression have for years been responsible for enabling branch offices, retail outlets and field offices to enjoy the advantages of quick, reliable and problem-free printing from a central print server in the data center to a local network printer. These advantages include the following functions:

Immediate printing thanks to STREAMING: With other print solutions, users have to wait until the entire print job has been processed before printing starts. Not with ThinPrint: Here, printing begins immediately thanks to streaming, and the first page is printed even while the rest of the print job is still being transferred.

One-time transfer of graphical data with SPEEDCACHE: Here, the server-client communication is not initiated again unnecessarily, as a check is performed for each print job to see if graphical elements are repeated within the job. If yes, they are only transferred once with the result that printing can be completed more quickly.

Lower data transfer and reliable print results via FONT MANAGEMENT: With ThinPrint Font Management, users can use all international fonts and special characters and can rely on error-free illustration. In addition, only the actually required font characters are transmitted. This reduces the data volume to be transmitted by up to several MB depending on the font.

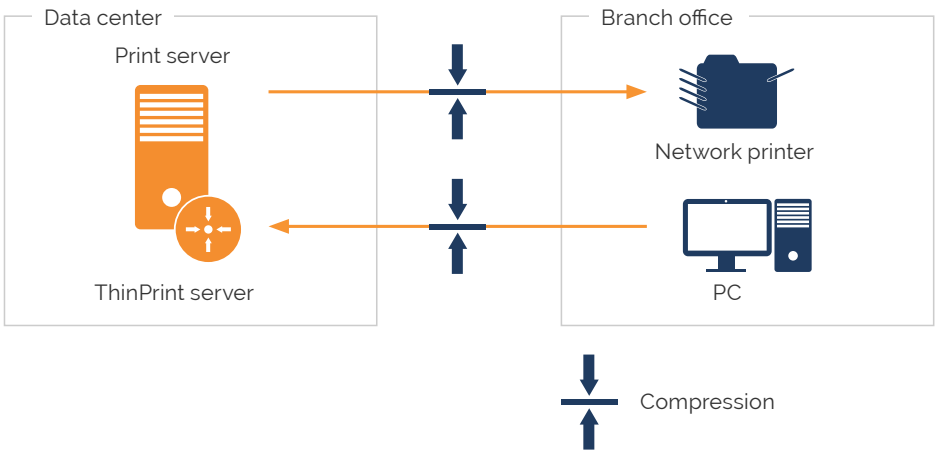
Connection-oriented BANDWIDTH MANAGEMENT: Unlike simple, user-based methods, the maximum bandwidth is not exceeded. Not even if several users are printing at the same time.

Intelligent compression process called ADVANCED ADAPTIVE COMPRESSION: The process adapts itself according to the content of a print job and to the available bandwidth. This allows for print data compression of up to 98%. Thus, the printing speed, as well as all other features, are accelerated significantly and bandwidth bottlenecks are avoided.

4.2 Compression for all Transmission Channels

As already mentioned, ThinShare is the last piece in the jigsaw, ensuring that there is no need for print servers in branch offices, as print data can be compressed on all channels.

Before ThinPrint 10, the print data was only compressed on the section between the print server in the headquarters and the network printer in the retail outlet. Thanks to ThinShare technology, it is now possible to transmit compressed print jobs from the branch office to the central print server in the company's headquarters. For example, the PC in the branch office sends the print data to the central print server in the data center, and the data is then compressed again and sent to the network printer in the branch office.



But how does **ThinShare** work? It is based on the **Advanced Adaptive Compression Feature** (see explanation in 4.1. Prerequisites for ThinShare are the virtual driver called ThinPrint Output Gateway and the V-LayerTM technology, which keeps real and virtual desktops and Remote Desktop Session Hosts (formerly called Terminal Servers) free from native printer drivers. Thus the ThinPrint Output Gateway merely simulates a single printer driver.

Print jobs are thus compressed wherever a printer is mapped with the ThinPrint Output Gateway.

The native drivers are now only found on the print server. No native printer drivers are required at the client side, just the ThinPrint Output Gateway. This sends the print data to the print server in a device-neutral form. At the print server, it is then rendered with the V-Layer™ technology from ThinPrint and the respective printer driver, and can be sent to the desired printer. The V-Layer™ makes it possible to manage native printer drivers centrally. On real and virtual desktops, only the ThinPrint Output Gateway virtual driver is used.

Print jobs can be compressed wherever a printer is mapped with the ThinPrint Output Gateway. If the ThinPrint Output Gateway is used on PCs, laptops, etc., ThinShare can be used to compress the print data being sent to the central print server in the data center.

This is the process when using ThinPrint and ThinShare:

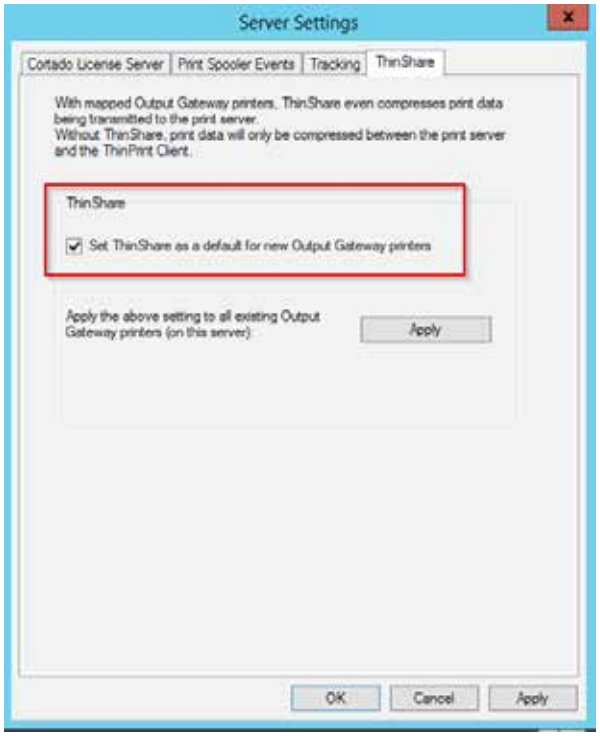
1. The printers are made available to the users via policies.

2. The PC connects to the released printers and the ThinPrint Output Gateway virtual driver is transferred to the PC.

3. This makes it possible to compress the print data that uses the section between the PC and server.

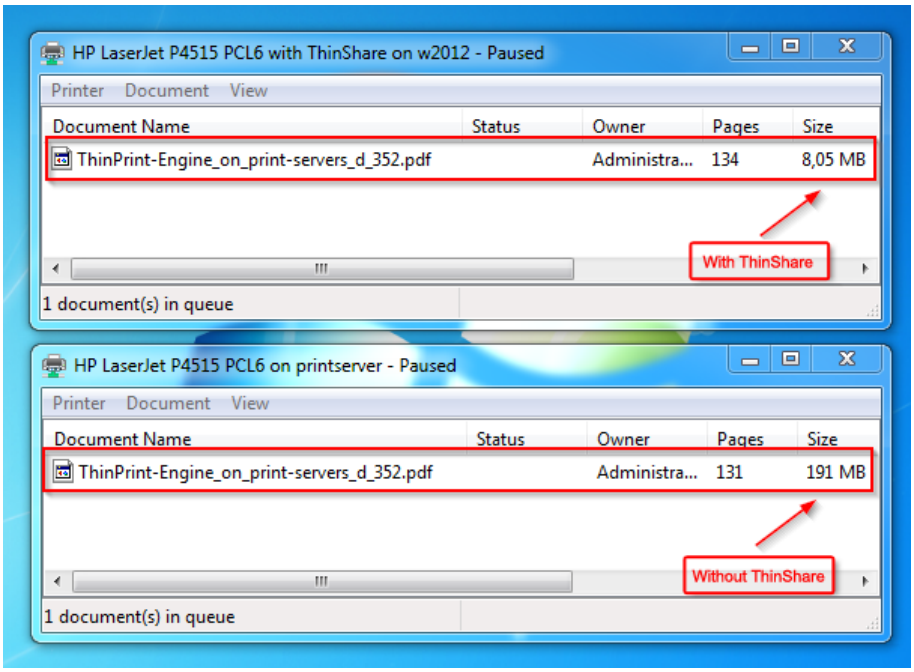
To enable compression, no additional software must be installed, as the printer drivers are transferred to the desktops via the ThinPrint Output Gateway. For printer driver distribution, the standard Windows sharing process is used, hence the name ThinShare.

ThinShare is activated centrally on the print server for all print objects that use the virtual ThinPrint Output Gateway driver.



4.2.1 The Compression Rate for ThinShare with Advanced Adaptive Compression

ThinShare in connection with Advanced Adaptive Compression can provide significant compression. During transfer of the print data from the client to the print server and back, the print data is **compressed by up to 98%**.



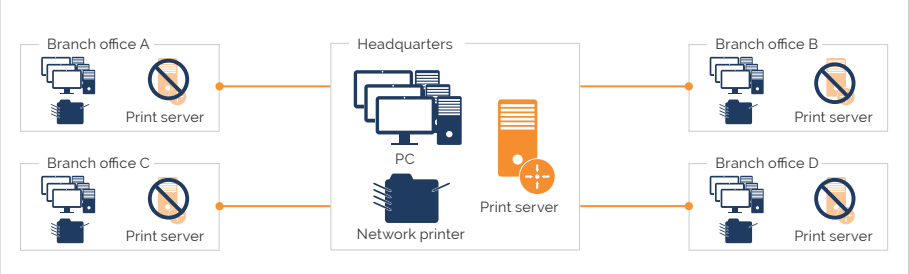
This screenshot shows the transfer volume saved for this print job with and without ThinShare. In this case, a compression of **95.8%** is achieved.

The compression rate depends on the content of the document and the respective application providing the print file.

5. Benefit Fully from Server Centralization

With ThinPrint, you are offered optimal support for centralization of the server landscape. In addition to consolidation in branch offices, centralization with ThinPrint also involves other plus points.

Consolidate print servers, and thus eliminate them in branch offices



Get the advantages of a print server without incurring unnecessary hardware, operating, energy and license costs due to an additional local print server in the branch office. You can then enjoy the advantages of "serverless printing" without the disadvantages of client-based printing. You can also benefit from print management with a central print server.

Consolidate Remote Desktop Servers

By using a central print server with ThinPrint, remote desktop servers are kept completely free of printer drivers and are largely unburdened by printing. The higher system stability allows employees to work more efficiently and, by reducing the server load, more users can work on each server, which means hardware costs can also be saved.

Manage drivers at just one location

Thanks to central printer driver management by ThinPrint, it is not necessary to install drivers on individual workstations. It doesn't matter if there are PCs, ThinClients or virtual desktops. Remote desktop session hosts are also kept completely free of printer drivers.

Combine local printing with virtual desktop and central print server

If employees do not use network printers, but local printers, e.g., in small subsidiaries or at home workstations even in a remote desktop session, then these print jobs can also be outsourced to the central print server and compressed via ThinPrint through the session and delivered quickly and reliably (guaranteed by the exclusive "ThinPrint Virtual Channel Gateway" ThinPrint function).

Central and simple print management

In relation to print management, there are many advantages to ThinPrint in addition to the central driver management. Management can be largely automated. This is possible thanks to the printer mapping function **ThinPrint AutoConnect**. This ensures that the right printer is always available to the employee, whether in ICA or RDP sessions or for access to virtual or real desktops. Thanks to the **ThinPrint Management Center**, significant simplification of printer management is achieved through the automatic and simultaneous set-up of printers for the company-wide printer landscape.

Helpdesk queries are minimized
Without ThinPrint, printing is one of the main factors in the volume of help desk queries. Features for stable and high performance printing with ThinPrint mean the support requirement is kept to an absolute minimum.

Summary

The desire for serverless printing is understandable, as you save additional costs and effort. But an IT environment without its own print server can result in considerable problems, as the lack of central management and print job processing is of no benefit to anyone. Printing performance and reliability fall, as does the productivity of employees.

So it is necessary to perform a balancing act between utilizing the advantages of a central print server, and not generating further costs due to additional print servers in branch offices. The recommendation is therefore to promote server consolidation with ThinPrint. The solution provides you with unique modules for successful server consolidation:

- **Absolute reliability:** The central print server guarantees reliable processing of all print jobs and relieves the burden on the printers. This means it is possible to avoid otherwise frequent stability problems and print delays.
- **No desktop installation:** The entire ThinPrint technology can be used on desktops via a simple printer release.
- **Driver Free Printing:** Instead of a wide range of different printer drivers that are distributed throughout the company and are a headache for your help desk, only a single virtual driver, the ThinPrint Output Gateway, is used. The native printer drivers are kept on the print server.
- **High compression:** ThinPrint's efficient compression starts directly in the virtual driver and optimizes print data both on the way from the driver to the central print server and on the way back to the printer in the branch. With additional features, such as SpeedCache (one-time transfer of graphical data) or streaming, the print process is performed quickly and reliably.
- **Central print management:** Group guidelines, with which print costs can also be reduced by setting default finishing options (only duplex, greyscale printing), can be distributed centrally and automatically assigned to printers. You benefit from all the advantages of central processing of print jobs, such as prioritization, time-controlled printing and central troubleshooting.
- **Perfect integration of virtual desktops:** Remote desktop servers are kept completely free of printer drivers. Thus more users can be supported per server. All ThinPrint advantages are also optimized for virtual desktops. Bandwidth monitoring ensures that printing remains in the background
- **Elimination of print servers in branch offices:** The central print server undertakes the entire print management very efficiently. This means print servers in branch offices are superfluous and you make significant savings in terms of effort and costs.

Additional white papers or questions:
You can download this and many other white papers on relevant IT subjects here: **www.thinprint.com/whitepaper**

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 Cortado 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@cortado.com**

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