ThinPrint®

Printing with Citrix and ThinPrint

ThinPrint White Paper

Contents

1. Challenges for Print Landscapes

Printing continues to present a real challenge for companies in many situations. You cannot generalize here, because the problems are many and varied. Whilst in one company the printer administration is to be simplified, in another the administrator is struggling with too low bandwidths in various branch offices.

In this white paper, various challenges are addressed, and alternatives to the Citrix Universal Print Server (UPS) and Citrix Universal Print Driver (UPD) are presented using ThinPrint components in Citrix Virtual App and Desktop environments.

1.1 Printing to Locally Connected Printers

Let's consider the first, simple configuration: A terminal or Citrix server with client systems, where locally installed printer objects are found. These can be USB printers on one hand, but also locally installed network printers on the other.

The user sometimes works locally on their system, and sometimes in a terminal session. They would like to use their existing printers in this session. The printer object in the user's session must send the data generated by the application back to the client system. Here a network load occurs from the terminal server to the client whichplays hardly any role within the LAN can lead to problems regarding latencies and availability when printing in branch offices over the WAN. Despite the significantly improved infrastructure in terms of bandwidth in recent years, the volume of data to be transferred often still plays a role.

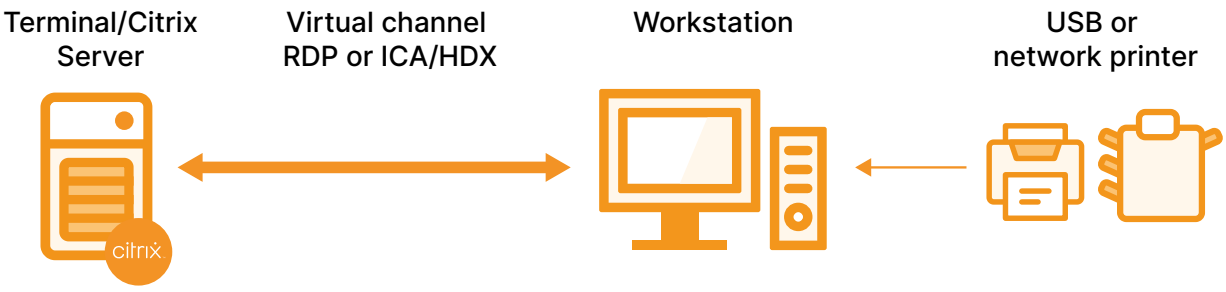

Figure 1: *Terminal/Citrix server with client system and local printer*

Here **Citrix** provides the opportunity to work on the client system with the Citrix Workspace and to connect printers into the session. As with Microsoft's Easy Print, no native print driver is required on the server here. Instead, the Universal Print Driver (UPD) is used. The print data created is

returned to the Citrix client within the virtual channel of the ICA session. Here Citrix provides the opportunity to transfer the print data in a controlled way. For this purpose, the data is compressed and QoS rules ensure that only part of the bandwidth is used for printing.

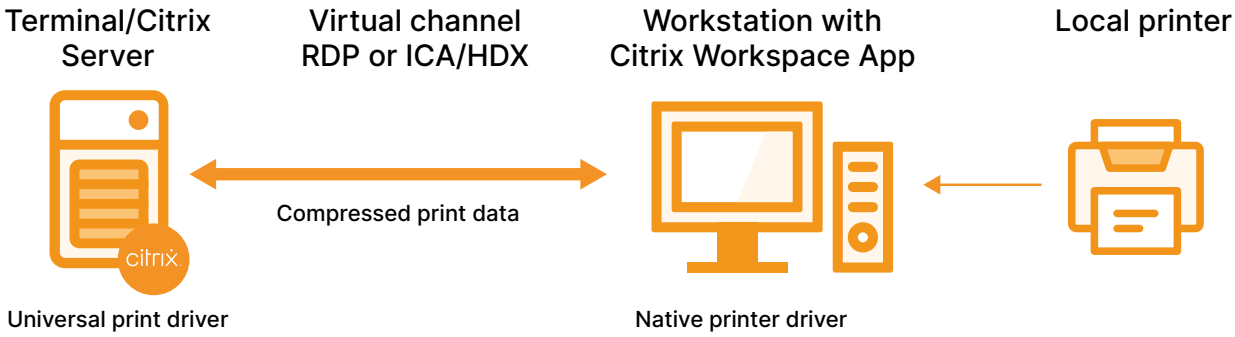

Figure 2: Citrix Workspace on the client system connects printers into the session

With **ThinPrint,** the same print path is implemented on a Citrix server. A ThinPrint Client is on the client system and the ThinPrint Engine on the server. This integrates the user's local printers into the session, driver-free, and sends the print data back to the client within the virtual channel. Up to this point, the process is very similar.

Benefits of ThinPrint without the use of print servers:

ThinPrint always compresses print data, providing this is directed via one of the in-house ThinPrint ports. Here Citrix only provides compression between two Citrix servers and via the virtual channel of a Citrix session. The ThinPrint Ports send the print data compressed to the ThinPrint Client, which is installed on the host. The client decompresses the print data and forwards it to the local printer object. Optionally, the print jobs can also be encrypted.

In every ThinPrint port, a maximum bandwidth may be configured that must not be exceeded when printing. Thus the bandwidth between the server and any ThinPrint Client is explicitly defined in a connection-oriented way. This has the advantage that the printing process always remains in the background and does not impair the performance of the applications, whatever is printed and however many users are printing at the same time.

It is also possible to separate the print data completely from the virtual connection and transfer it via TCP/IP port 4000. This does not change ThinPrint functionality in any way.

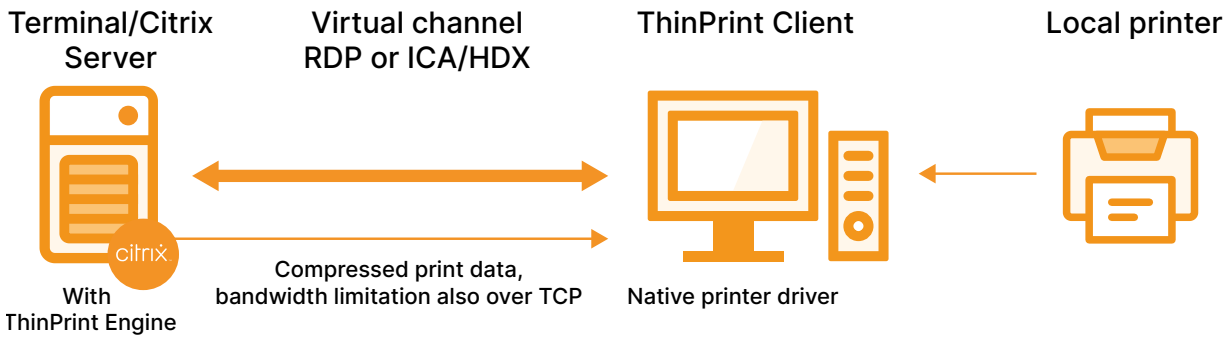

Figure 3: Transferring print data via TCP/IP

Thanks to partnerships with numerous manufacturers, there are many thin clients with a pre-installed ThinPrint Client available. These devices may also be used with a connected USB or network printer and receive compressed print data from the terminal. Thus ThinPrint offers maximum flexibility in placing or distributing the ThinPrint Client and ensures the best performance in all scenarios.

ThinPrint also offers the possibility to connect native drivers into the Citrix session using templates instead of the virtual driver. This can be helpful, among other things, when special functions of the print system need to be utilized.

Furthermore, ThinPrint supports administrative exemptions for printer mapping. This ensures that only printers that the users actually need are connected into the Citrix sessions.

1.2 ThinPrint Print Server and Universal Print Server

Print servers are best practice for network printing in companies. They ensure reliable processing even of very large print volumes, and also the prioritizing of print orders, if required. Print servers are the foundation for an optimally equipped print landscape. Starting from the possibility of keeping all native drivers on the print server and working with the Universal Print Driver (UPD) or the ThinPrint Output Gateway, thus keeping all other systems free of native drivers, to the central administration of the entire printer landscape.

At a central location with print and Citrix servers, there is always sufficient bandwidth available in the LAN. The problem arises when a branch office employee wants to print via the Citrix farm and the print server. Network printers on the dedicated print server are connected into the Citrix session. In this scenario, there is no way to control the print data stream to a printer in a branch office. Print jobs have the unpleasant characteristic of utilizing the full bandwidth when transferring data, which can lead to the impairment of other services.

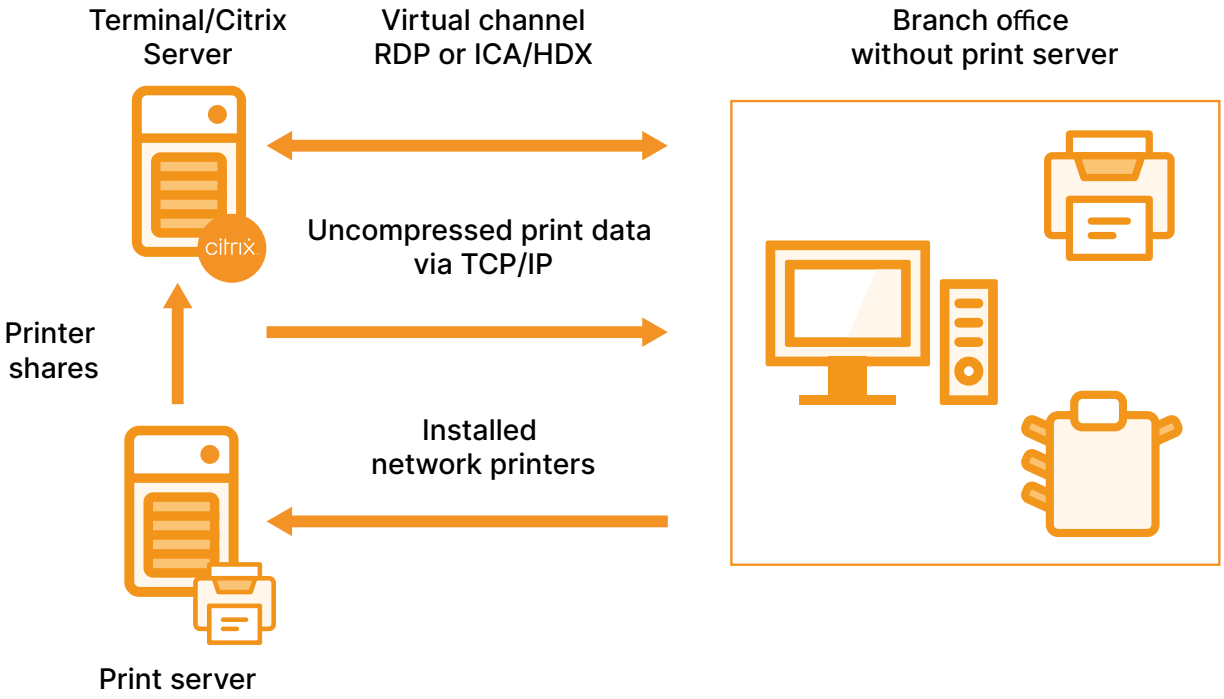

Figure 4: Print landscape with additional dedicated print server

In this case, **Citrix** offers the option to compress the data between the UPS and the Citrix Server. For compression with Citrix, the server must be located in the branch office, not centrally in the data center as usual. To achieve this, an additional print server can be installed in the branch office, which enables compression between the print server in the headquarters and the branch office.

In larger branch offices that already have a server, this can be implemented at minimal expense. The trend, however, is towards using as little hardware as possible in branch offices and minimizing the effort for maintenance and support.

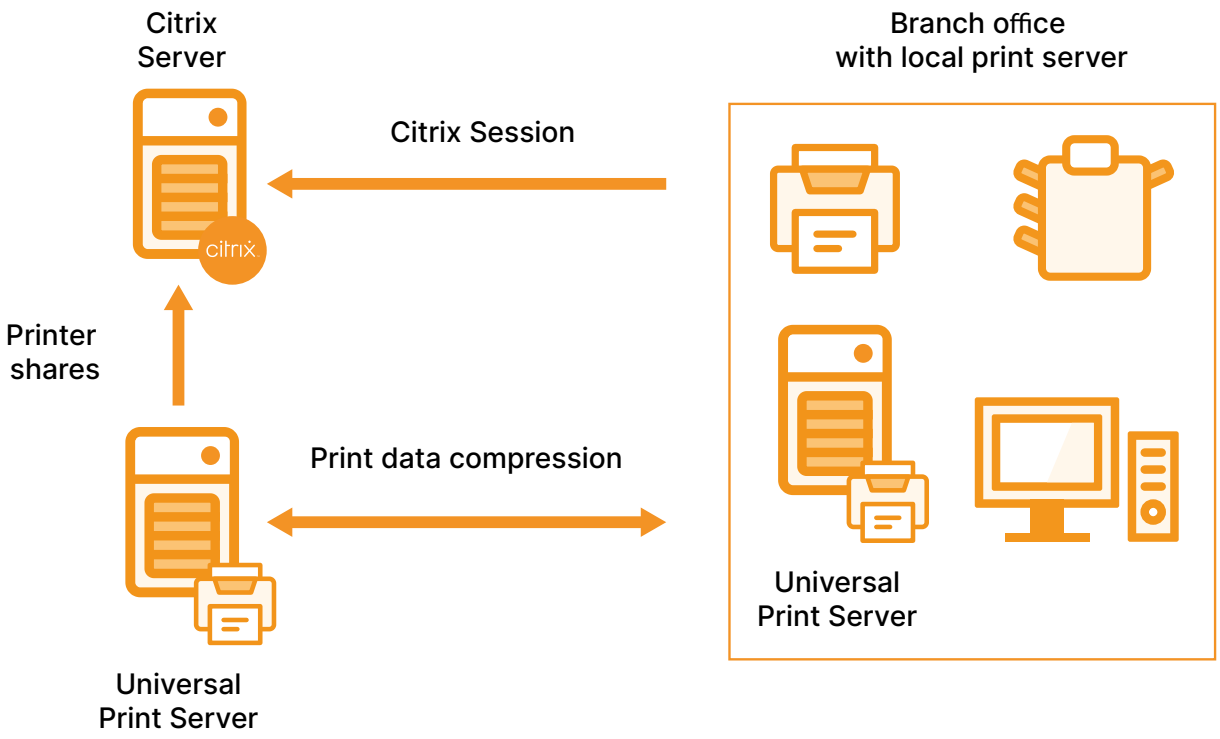

Figure 5: Citrix Server in the branch office

2. Optimized Citrix Printing with ThinPrint

The setup just described can be further adapted using ThinPrint components, so that a separate print server in the branch office is not need.

In the branch office, only a ThinPrint Client is required, which can receive the print data from the ThinPrint Engine. Ideally, the ThinPrint Hub is used for this purpose, as it can be easily integrated into the respective LAN of the branch office and administered remotely. Alternatively, a printer with an integrated ThinPrint Client can be used.

In this scenario, all the network printers are on one or more central print servers with a ThinPrint Engine installed. From there, compressed print data is sent to the ThinPrint Client in the branch office via ThinPrint ports.

Activating the V-Layer™ function keeps the Citrix servers free of drivers and only the ThinPrint Output Gateway is used. The printer driver used, the ThinPrint Output Gateway, supports not only basic functions but also finishing options such as punching and stapling. This means that in most cases the use of native drivers on the Citrix servers is no longer required, since everything is cov-

ered by the virtual printer driver. As with Citrix UPS, using the virtual driver is not a precondition. If special functions are, exceptionally, not available, the manufacturer's native driver may be used. In this case, too, the print jobs are compressed, as compression is independent of the driver used.

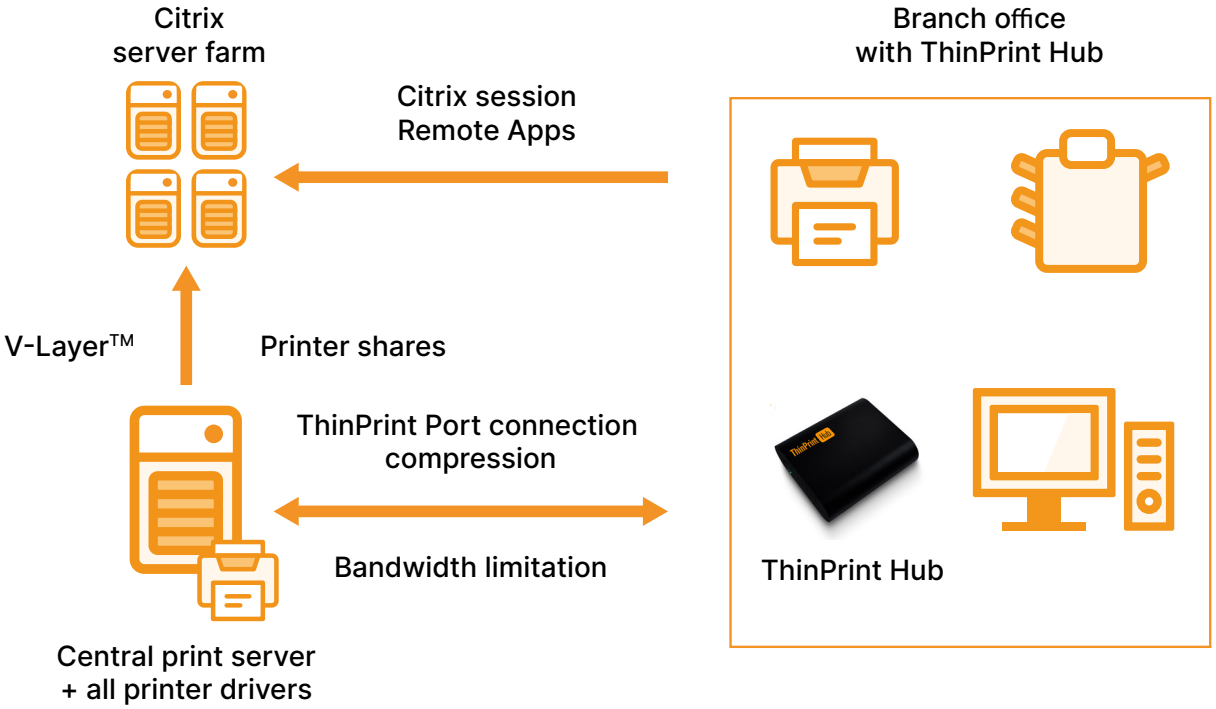

Figure 6: The ThinPrint Hub replaces the print server in branch offices

Furthermore, ThinPrint supports printing in masked networks without VPN. In this case, the ThinPrint Client is simply used as a gateway. A ThinPrint DMZ component, the Secure Tunnel (Connection Service), acts as an intermediary between the print server and client. The print server does not address the client directly via a VPN, but rather the print job is routed through the service in the DMZ. The ThinPrint Client connects to the service using a public IP and retrieves the print job. For this scenario, encryption of the print jobs is configured.

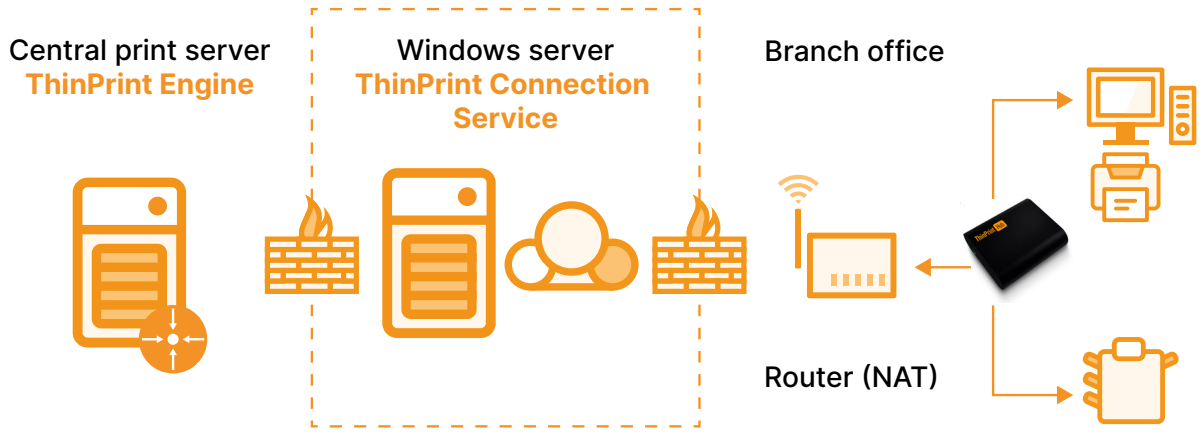

Figure 7: ThinPrint enables printing in masked networks

3. Conclusion

ThinPrint offers significant optimization potential for Citrix printing environments. This applies both to session printers that are directly mapped from the client, as well as printers that are connected to the session from a print server. But ThinPrint is not only dedicated to providing printers for the user; it also addresses topics such as compression of print jobs, high availability, consolidation of local print servers, and much more.

Below is a summary of the key benefits:

- **Driver Freedom:**
  ThinPrint's virtual driver eliminates the need for native printer drivers on the client side and on the Citrix Workers. In addition to basic functions, the virtual driver also supports finishing options like stapling and punching.

- **Printer Mapping:**
  Whether central print servers are used or not, with ThinPrint, the user always gets the correct printers in the Citrix environment. Administrators have various criteria available to assign printers. Optionally, the mapping of printers can also be configured for high availability.

- **Print Data Compression:**
  When printing to remote locations over WAN, print data can be compressed. This saves data volume, which leads to lower latencies for other services and makes printing faster.

› **Printing in Masked Networks Without VPN:**
VPNs are often required to remote locations because of local printers. ThinPrint enables printing in masked networks without VPN via the ThinPrint Connection Service (Secure Tunnel).

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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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