

.print RDP Engine Second Edition

Print management for Remote Desktop Connections
to Microsoft Terminal Servers (version 6.2)

Manual

ThinPrint GmbH
Alt-Moabit 91 a/b
10559 Berlin
Germany/Alemania

ThinPrint, Inc.
1236 Smith Ct Suite C
Cleveland, Oh 44116
USA/EEUU

ThinPrint APAC
L 10, 275 Alfred Street
North Sydney / NSW / 2060
Australia



Email: info@thinprint.com
www: www.thinprint.com
Issued: October 6, 2005 (v29)

© Copyright

This document is the intellectual property of ThinPrint GmbH. This document may be copied in whole or in part, provided this Copyright notice is included in every copy.

® Registered Trade Marks

All hardware and software names mentioned in this document are the registered trademarks of their respective company or should be regarded as such.

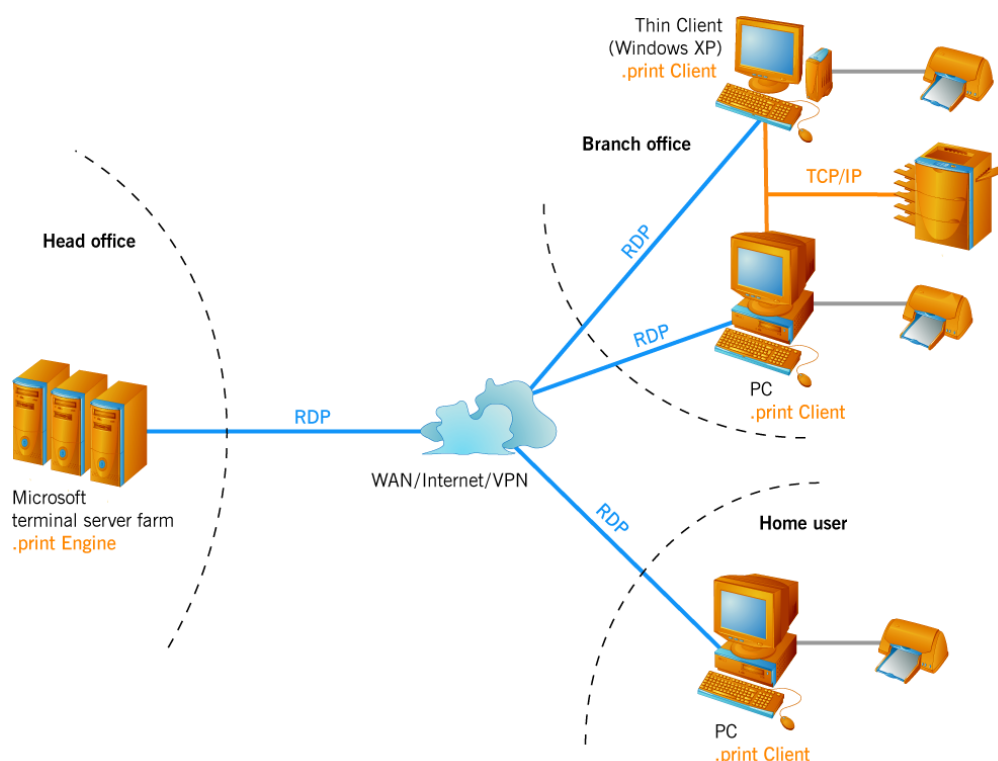
Introduction	4
What is ThinPrint .print?	4
Driver Free Printing	4
Advanced Adaptive Compression	4
.print Engine and .print Clients	5
Package contents	5
Tips for using this manual	5
Installation	6
Safety warning	6
Administrator permissions	6
System requirements	6
Installing .print Engine (per terminal server)	7
Controlling driver signatures	7
Installation with the .print Engine installation wizard	7
License Manager	8
ThinPrint Output Gateway	10
Disabling Windows printer mapping	11
Installing .print Client (per client machine)	12
Printing	13
Print process	13
Printing with preview	14
Changing printers	14
Alternative 1	14
Alternative 2	15
Alternative 3	15

Configuration (optional)	16
ThinPrint Output Gateway presettings on the server (administrators only)	16
Printer settings in a terminal session just before printing	18
Appendix	20
Customer service and technical support	20
Entering and activating licenses	20
Uninstalling or updating .print Engine	21
End User License Agreement	22
Glossary	26
Abbreviations	30
.print Engine feature comparison	31

Introduction

What is ThinPrint .print?

ThinPrint .print optimizes printing in almost any environment. With the inexpensive .print Remote Desktop Printing Engine, smaller businesses and even home workers can use .print technology on Microsoft terminal servers – with a minimum of effort for installation and administration. The .print RDP Engine enables printing via the Remote Desktop Protocol (RDP) as well as the patent pending **Driver Free Printing** process, with higher compression of print data.



Illus. 1 Possible scenario for running ThinPrint .print

Driver Free Printing

Thanks to this technology, time-consuming server-side installation and administration of printer drivers is no longer necessary. Printer driver conflicts on terminal servers are also a thing of the past. The printer drivers are only installed on the client PCs. That means that any type of printer can be used on any printer port; e.g., multifunctional devices (printer, fax, copier, and scanner in one device) on a USB interface or a laser printer on a bidirectional interface.

Advanced Adaptive Compression

Furthermore, .print Engine combines the efficient Driver Free Printing system with a completely new kind of compression, the **Advanced Adaptive Compression**. This method analyzes the individual components of a print job and compresses each with the respective best algorithm before transmitting the data.

Additionally, user errors that can occur when saving a document are corrected.

.print Engine and .print Clients

On the server side, a .print Engine is installed on each terminal server. .print Engine is responsible for data compression and Driver Free Printing. Auto-created client printers are created by .print AutoConnect, a component of .print RDP Engine.

A .print Client is installed on each Windows 32 client. It supports all available interfaces, including USB, infrared, and bluetooth. Moreover, .print Engine enables printing with network printers – both with TCP/IP printing and printing to shares.

Package contents

The .print Remote Desktop Printing Engine product CD contains:

- This manual
- The installation program Setup.exe for .print Engine (under ...\\Software\\ThinPrintServer)
- Four installation programs for .print Clients (under ...\\Software\\ThinPrintClient):

Operating system of the mobile PC	Installation program	
	German	English
Windows 95, 98, ME	TPRDPde9.msi	TPRDPen9.msi
Windows NT, 2000, XP	TPRDPdeN.msi	TPRDPenN.msi

In addition, you should have received a license key from your reseller or by email from ThinPrint (license key type: TRDP-0270-1-xxxxxx-xxxx).

Tips for using this manual

The following conventions should help make using this manual easier. The different typefaces and symbols represent recurring actions and types of text.

Tip!	Important tip, explanation, exception
SMALL CAPS	Menu, command, dialog panel, option
<i>Italic</i> "Name"	Proper name, emphasis, variable
Courier	Keyboard input
→	Consecutive menu or command
■	Enumeration, head note
Example	Example

- Procedural steps
- 1.
- 2.
- 3.

[Page 5](#) Links
www.thinprint.com

Installation

Safety warning

All ThinPrint products are pure software solutions. For safety warnings for your hardware, please consult the technical documentation provided by the respective manufacturer of each hardware device and component.

Administrator permissions

Administrator permissions are required for all installation and configuration procedures. It is therefore best to log on under Windows as ADMINISTRATOR.

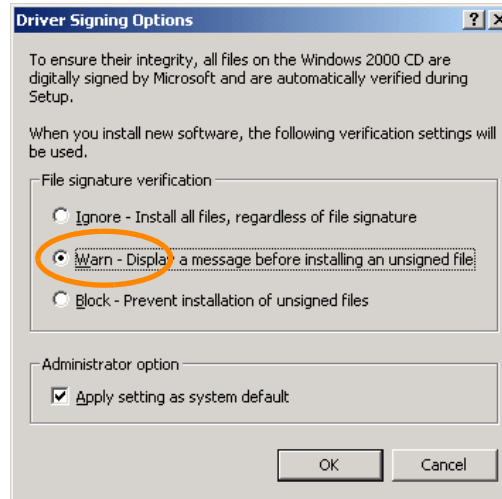
System requirements

- On the server: Windows 2000 Server, Service Pack 4 or later, Windows Server 2003;
Minimum hardware requirements: Intel Pentium/Celeron, AMD K6/Athlon/Duron or compatible processor with 733 MHz, 256 MB RAM, 3.5 MB of available hard disk space
- On the client: Windows PCs (NT, 2000, XP, 9x, ME) or terminals (thin clients) with embedded Windows NT or XP incl. Windows Installer version 2.0 and later;
Minimum PC hardware requirements: Intel Pentium/Celeron, AMD K6/Athlon/Duron or compatible processor with 233 MHz, 128 MB RAM, 1.1 MB of available hard disk space
- RDP network with at least one printer
- Internet Explorer 4.0 or higher

Installing .print Engine (per terminal server)

Controlling driver signatures

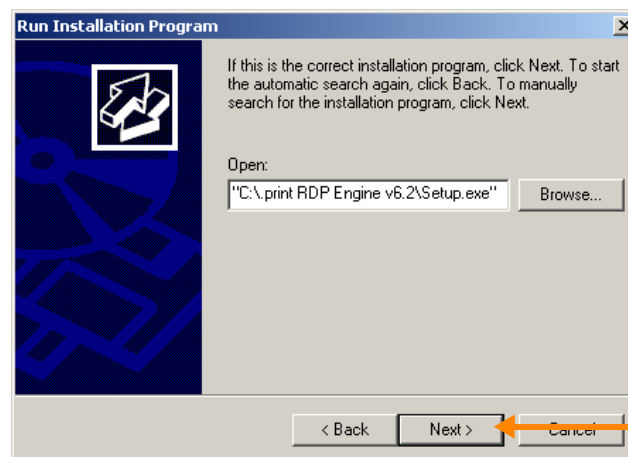
- Check that the file signature verification in Device Manager is not blocked (enable the option WARN in START→ SETTINGS→ CONTROL PANEL→ SYSTEM→ HARDWARE→ DRIVER SIGNING; Illus. 2).



Illus. 2 Select driver signing option WARN

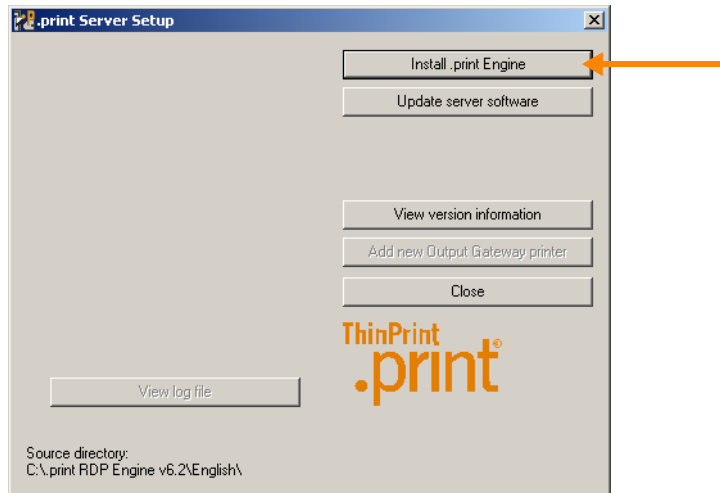
Installation with the .print Engine installation wizard

1. Start Setup.exe from CONTROL PANEL→ ADD/REMOVE PROGRAMS→ ADD NEW PROGRAMS→ CD OR FLOPPY→ NEXT→ BROWSE, select the path to the Setup.exe and click NEXT (Illus. 3).



Illus. 3 Selecting installation path

2. Choose a language and confirm with Ok.
3. Read the license agreement and ACCEPT it. The menu in Illus. 4 opens.
4. Select INSTALL .PRINT ENGINE.

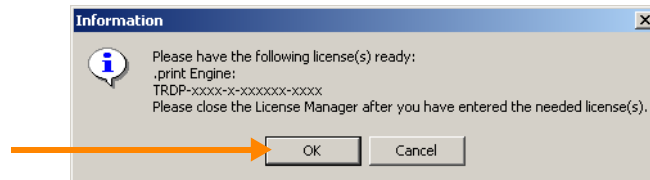


Illus. 4 .print Engine installation menu: Click INSTALL .PRINT ENGINE

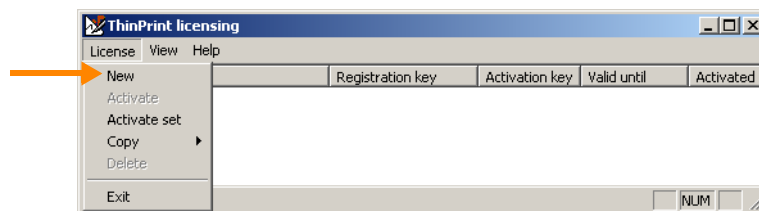
License Manager

Entering a license key

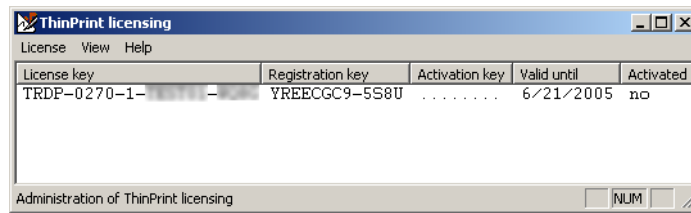
5. The prompt showed in Illus. 5 reminds you to have a (demo) license key ready for .print Remote Desktop Printing Engine (type: TRDP). Click OK, and License Manager opens (Illus. 6).
6. Select LICENSE→ NEW (Illus. 6) and enter the license key (case sensitive!). (If you do not have a license key, contact your dealer.)
7. Confirm with OK. The license key now appears under LICENSE KEY (Illus. 7).



Illus. 5 Tip: Have (demo) license key (TRDP...) ready



Illus. 6 Enter (demo) license key

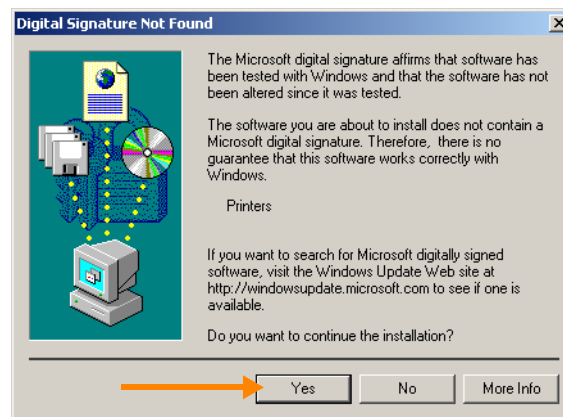


Illus. 7 License key entered (example for 32 bit Windows)

8. Click LICENSE→ EXIT in License Manager to continue with installation (Illus. 6).

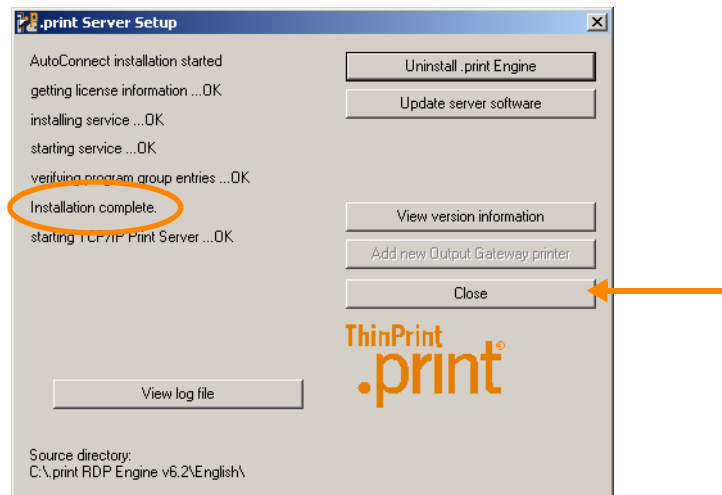
Tip! Note that the print spooler is restarted during installation of .print Engine.

9. Confirm ThinPrint Output Gateway's digital signature with CONTINUE ANYWAY (Windows 2003) or YES (Windows 2000; Illus. 8).



Illus. 8 Confirm Digital Signature of ThinPrint Output Gateway with YES

10. Installation has been completed successfully when the statement **Installation complete** appears in the .print Engine installation menu (Illus. 9). CLOSE the window.
11. Confirm all open windows of the Windows control panel with NEXT, FINISH, or CLOSE.

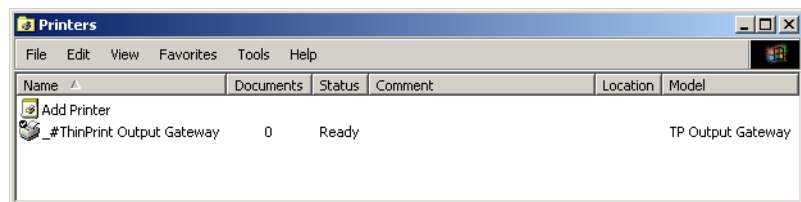


Illus. 9 .print Engine installation successfully completed

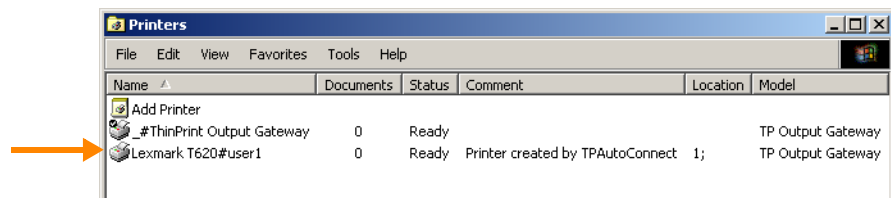
Tip! See [Page 20](#) for information about activating licenses.

ThinPrint Output Gateway

After installation, a ThinPrint Output Gateway is found in the Windows PRINTERS AND FAXES folder (START → SETTINGS → PRINTERS AND FAXES; Illus. 10). This printer object is a template for auto-created client printers. In other words, when a user establishes a connection to the terminal server, a printer is created for him in the RDP session; the session printer inherits all settings (e.g., compression level and the “TP Output Gateway” printer driver) from the template (Illus. 11).



Illus. 10 _#ThinPrint Output Gateway printer object in server PRINTERS AND FAXES folder



Illus. 11 A session printer in server PRINTERS AND FAXES folder: “TP Output Gateway” printer driver inherited from a template (example)

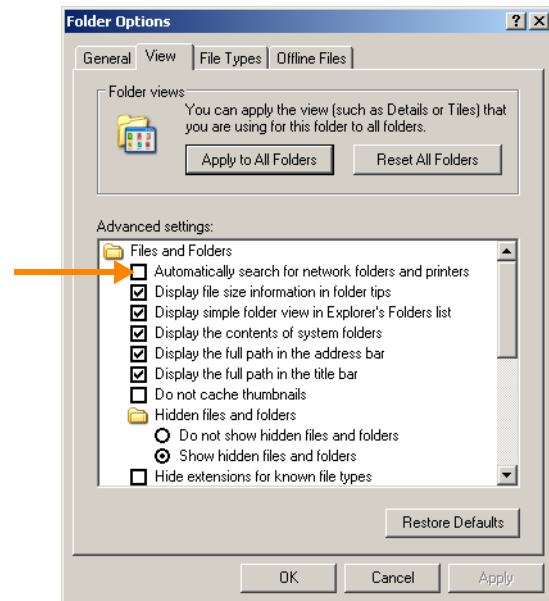
Configuration options for ThinPrint Output Gateway are described on [Page 16](#).

Disabling Windows printer mapping

By default, .print Engine automatically creates (maps) client printers in every terminal session. To simplify the selection of a printer within a session, the Windows automatic printer mapping function should be disabled within and outside of the session. To do so:

Outside of the terminal session

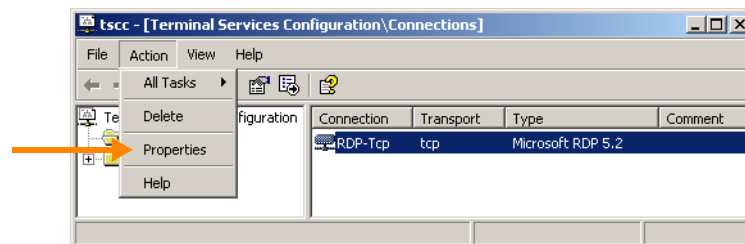
1. In Windows Explorer, select TOOLS→ FOLDER OPTIONS→ VIEW.
2. Disable the AUTOMATICALLY SEARCH FOR NETWORK FOLDERS AND PRINTERS function (Illus. 12). Confirm with OK.



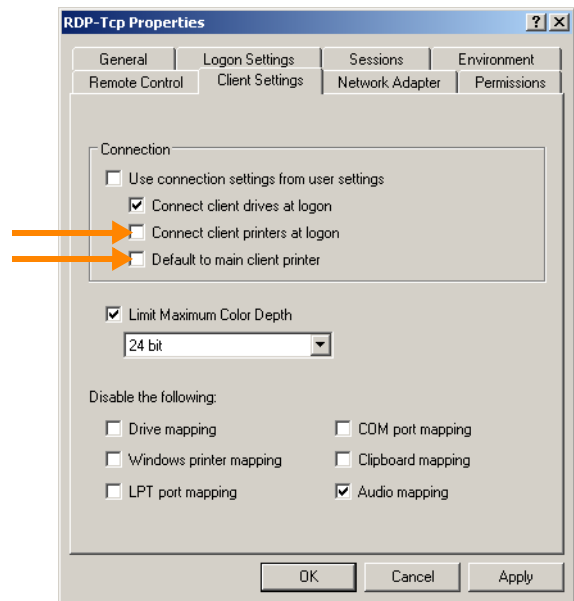
Illus. 12 Explorer settings for printer mapping

Within the terminal session

1. In Windows Control Panel, select ADMINISTRATIVE TOOLS→ TERMINAL SERVICES CONFIGURATION.
2. Click on the RDP-TCP connection and select ACTION→ PROPERTIES (Illus. 13)
3. Disable CONNECT CLIENT PRINTERS AT LOGON and DEFAULT TO MAIN CLIENT PRINTER (Illus. 14). Confirm with OK.



Illus. 13 Opening RDP configuration

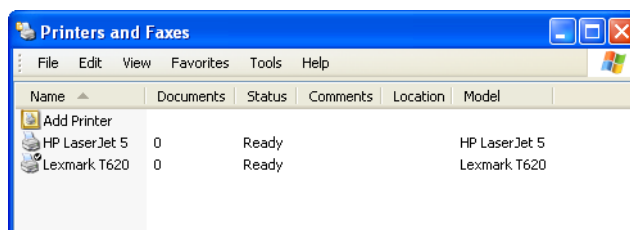


Illus. 14 Terminal session settings for printer mapping

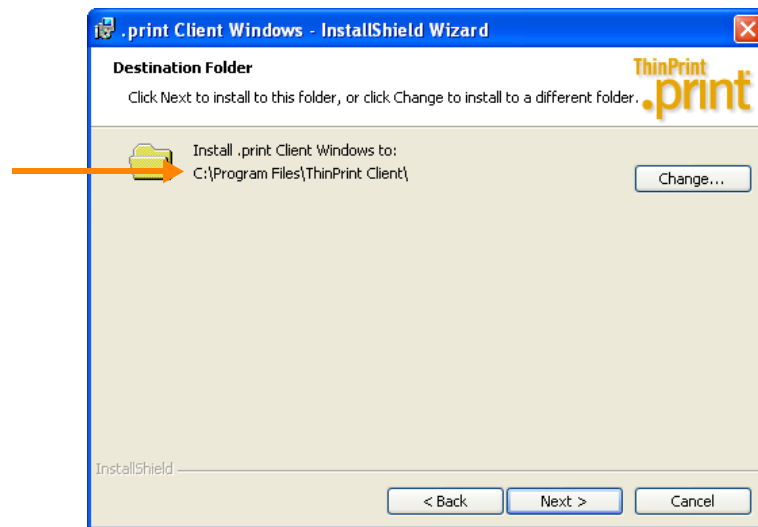
Installing .print Client (per client machine)

.print Clients must be installed on the client machines to receive .print print data.

1. Copy **TPRDPenN.msi** (for NT compatible machines) or **TPRDPen9.msi** (for 9x compatible machines) from the client directory on the product CD onto the relevant client PC. Install .print Client Windows (RDP) as follows:
2. Before beginning installation of .print Client, install at least one local printer (Illus. 15). (Additional printers can be installed later at any time.)
3. Run PRDPenN.msi.
4. Following select NEXT.
5. Read the license agreement and accept its terms with NEXT.
6. Select the installation path (Illus. 16) and click NEXT.
7. Following select INSTALL.
8. Click FINISH to complete the installation.



Illus. 15 Locally installed printers;
Windows default printer: Lexmark T620 (example)



Illus. 16 Installing .print Client Windows: path selection



Illus. 17 .print Client in the task bar

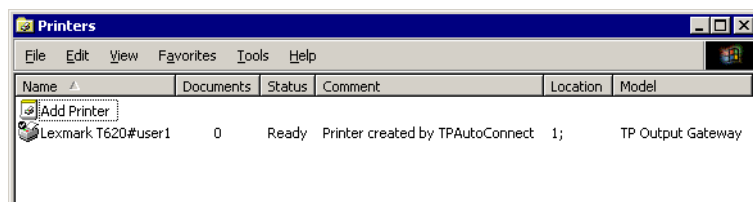
Once installation is complete, .print Client Windows will be started when a RDP session is begun; its icon appears in the task bar on the local Windows machine (Illus. 17).

Tip! The Windows Installer version 2.0 or later is required to install .print Client under Windows 9x/ME. In this case, the file **TPRDPen9.msi** will be installed.

Printing

Print process

- Establish a remote desktop connection¹ from the client machine to the terminal server and log on (in this example, as “user1”). The local Windows default printer appears in the sessions PRINTERS AND FAXES folder (Illus. 18).
- Open an application and print using this printer.



Illus. 18 Session printer from “user1” (example)

¹ Also: RDP session or connection as terminal services client

Printing with preview

Once the print preview is enabled (Illus. 29) the print job appears in the .print viewer (= ThinPrint Viewture; Illus. 19). Here you can:

- Print to any local printer
- Navigate in documents with more than one page
- Zoom
- Cancel print job reception
- Save print jobs in .tpf format²



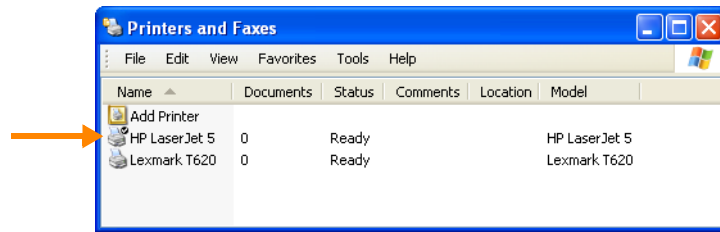
Illus. 19 Preview with Viewture (water mark = demo version; example)

Changing printers

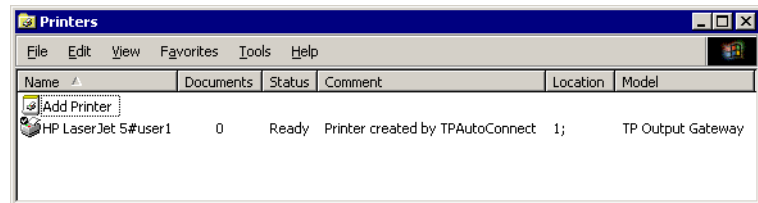
Alternative 1

- Disconnect the current terminal session (or remote desktop connection) (it is not necessary to log off).
- Select a different Windows default printer in the local PRINTERS AND FAXES folder (Illus. 20).
- Reconnect the terminal session (or start a new one). The new default printer is displayed in the PRINTERS AND FAXES folder (Illus. 21).

² The .print Viewture tool is needed for reloading a saved print job; see: (www.thinprint.com/dotprint/ → INFORMATION & DOWNLOADS → SOFTWARE → SOFTWARE-TOOLS → THINPRINT VIEWTURE)



Illus. 20 Changing Windows default printer; new default printer: HP LaserJet 5 (example)



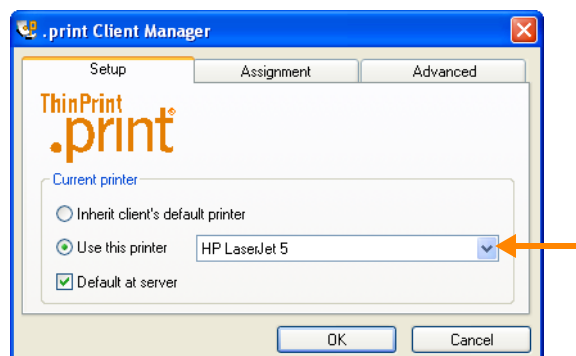
Illus. 21 New session printer from "user1" (example)



Illus. 22 .print Client in the task bar

Alternative 2

- Open the .print Client Manager during a session by clicking its icon in the local machine's task bar (Illus. 22).
- Change the CURRENT PRINTER and select OK (Illus. 23).
- Disconnect the current terminal session (or remote desktop connection) (it is not necessary to log off).
- Reconnect the terminal session (or start a new one)
- Print from the terminal session.



Illus. 23 Changing current printer to HP LaserJet 5 (example)

Alternative 3

- Print from the terminal session (remote desktop connection) with print preview ([Page 14](#)).
- Print from the preview to any printer (Illus. 19).

Configuration (optional)

All .print RDP Engine server and client components can be used immediately after installation; The following configuration options are available for adjusting the individual features to your specific requirements.

ThinPrint Output Gateway presettings on the server

(administrators only)

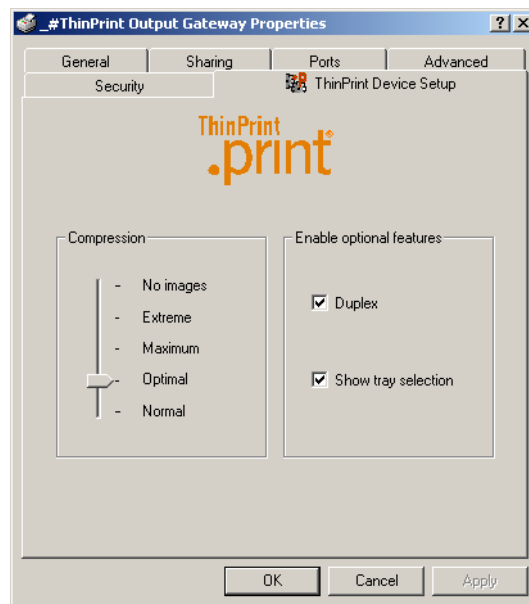
The following settings for the **_#ThinPrint Output Gateway** template can be made in the server's PRINTERS AND FAXES folder; they will then apply to all session printers.

- Select FILE→ PROPERTIES→ THINPRINT DEVICE SETUP for **_#ThinPrint Output Gateway** in the server's PRINTERS AND FAXES folder:

There are five options available for print data **compression** (Illus. 24):

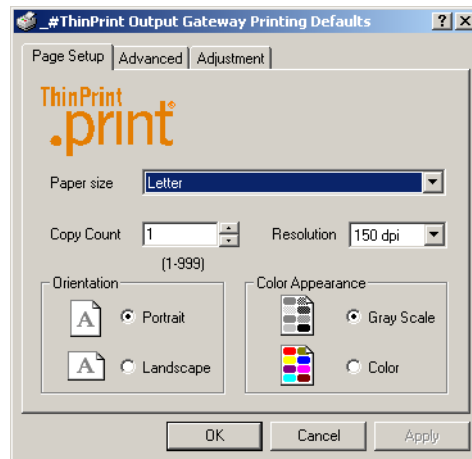
- Normal Lossless
- Optimal Lossy but with good image quality
- Maximal Lossy, with average image quality
- Extreme Greatest possible compression without regard to image quality
- No images Lossless, but only text will be printed

The additional options DUPLEX and PAPER SOURCES can also be enabled for users.



Illus. 24 ThinPrint Output Gateway: compression, duplex, and paper tray selection settings

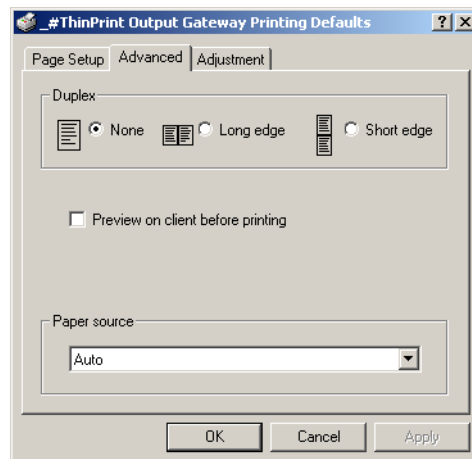
- Select: **ADVANCED**→ **PRINTING DEFAULTS**. Here, you can edit page and color settings (Illus. 25), including **RESOLUTION** and **COLOR** or **GRAY SCALE**.



Illus. 25 ThinPrint Output Gateway: specifying paper format, resolution, color, etc., on the server

If the printer installed on the client has these options³, you can edit the following settings for double-sided printing under **ADVANCED** (Illus. 26): **LONG EDGE** for portrait or **SHORT EDGE** for landscape.

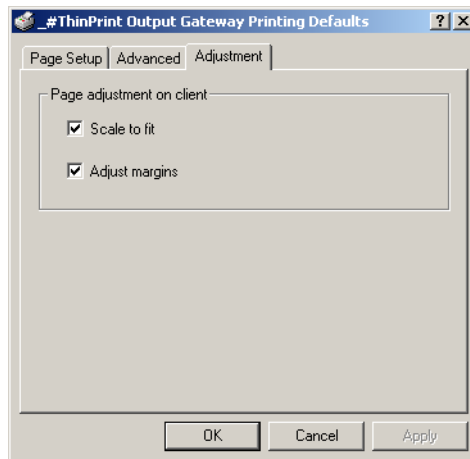
If the user is to have a printable preview of each printout, enable **PREVIEW ON CLIENT BEFORE PRINTING**. From this preview any client printer can be used.



Illus. 26 ThinPrint Output Gateway: setting compression, duplex, and paper tray selection on the server

ADJUSTMENT offers options for the default procedure if documents appear displaced or smaller on the printout (Illus. 27). It is recommended to leave the template settings enabled, so that the session user can choose whether this function should be disabled ([Page 19](#)).

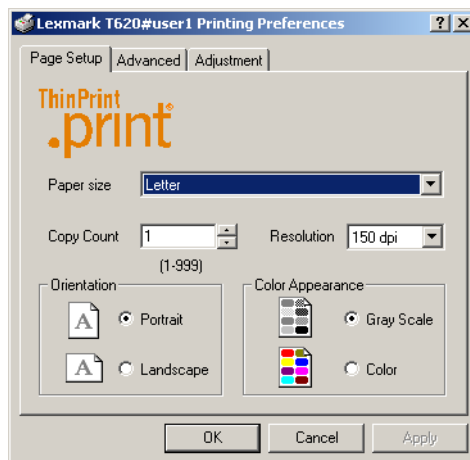
³ Otherwise these settings have no effect.



Illus. 27 ThinPrint Output Gateway: disabling scaling and margin adjustment on the server

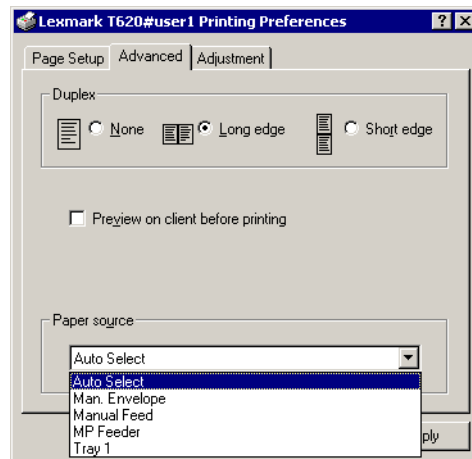
Printer settings in a terminal session just before printing

It is possible for users (in a session and only for a session) to change some printer settings before printing. The following page and color settings can be edited under GENERAL→ PRINTING PREFERENCES (Illus. 28): PAPER SIZE, COPY COUNT, PRINT RESOLUTION, PORTRAIT OR LANDSCAPE, AND COLOR OR GRAY SCALE.



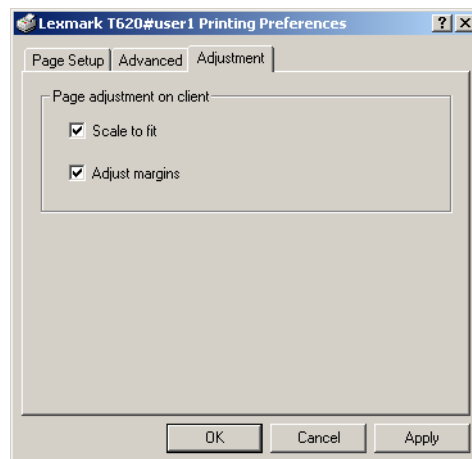
Illus. 28 ThinPrint Output Gateway: specifying paper format, resolution, color, etc., in the session

If the printer supports it, there are settings for double-sided printing under ADJUSTMENT (Illus. 29): LONG EDGE for portrait and SHORT EDGE for landscape. If you want a printable page preview, select PREVIEW ON CLIENT BEFORE PRINTING. Select the PAPER TRAY or PAPER SOURCE.



Illus. 29 ThinPrint Output Gateway: specifying compression, duplex, and paper tray selection in the session

ADJUSTMENT offers options for the default procedure if documents appear displaced or smaller on the printout (Illus. 30). If printouts appear small, disable the SCALE TO FIT function. Disable ADJUST MARGINS if printouts are displaced on the page.



Illus. 30 ThinPrint Output Gateway: disabling scaling and margin adjustment in the session

Appendix

Customer service and technical support

Customer Service support@thinprint.com
Call-Support: +49-30-394931-97

ThinPrint website www.thinprint.com/support.htm

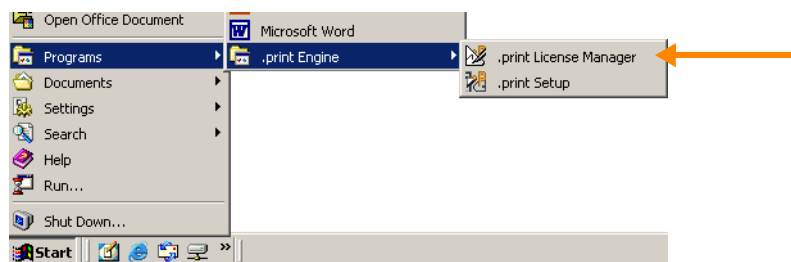
Entering and activating licenses

Tip! Activating a .print license

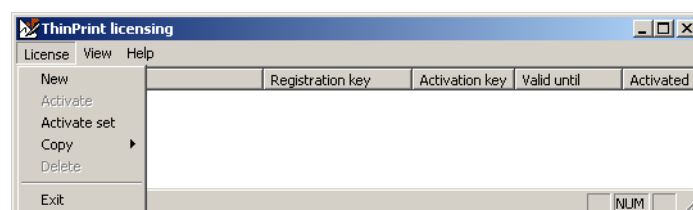
A demo key used to install a test version is valid for 30 days; it cannot be activated. The test period can be seen in License Manager under VALID UNTIL (Illus. 7; [Page 9](#)).

Once you have successfully installed and tested .print Remote Desktop Printing Engine, you can purchase a full license. You will receive a new license key, which is then entered in License Manager and activated. To activate the license, select SERVICES→ SOFTWARE ACTIVATION at the ThinPrint website and follow the instructions. Once your information has been verified, you will receive an **activation key** by email.

1. Open the License Manager from START→ PROGRAMS→ .PRINT ENGINE→ .PRINT LICENSE MANAGER to enter license keys, check registration keys (for activation), and activate licenses (Illus. 31).
2. The window depicted in Illus. 32 opens; select the desired function: enter a NEW key, COPY a registration key, or ACTIVATE a license.



Illus. 31 Starting License Manager



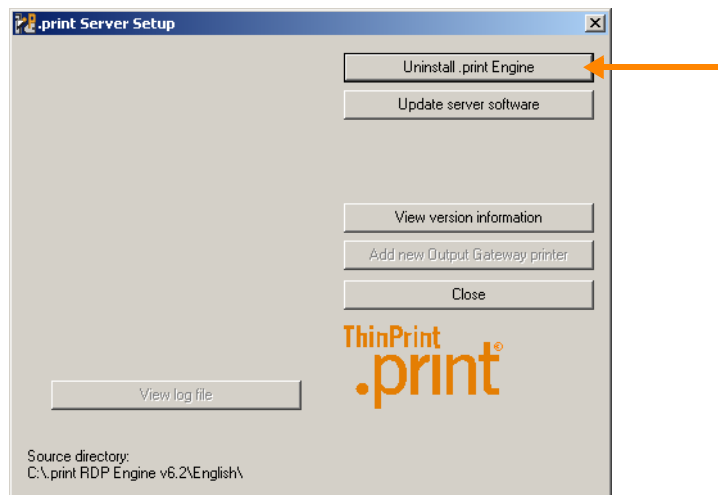
Illus. 32 License Manager functions

Uninstalling or updating .print Engine

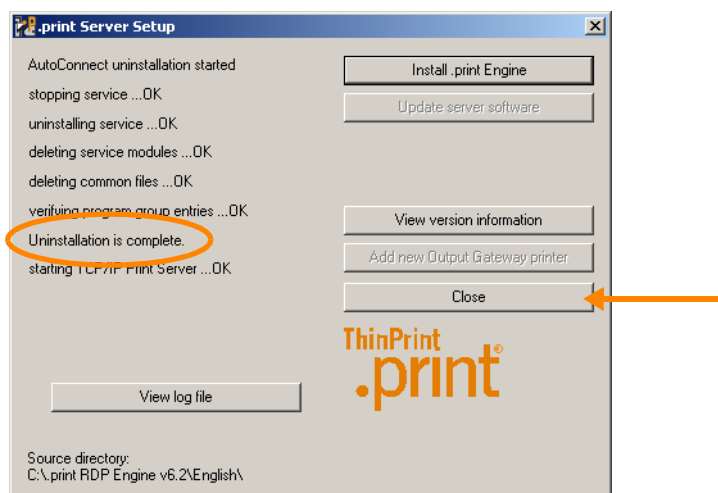
1. Delete the printer _#ThinPrint Output Gateway from the server's PRINTERS AND FAXES folder.
2. Run **Setup.exe** from SETTINGS→ ADD/REMOVE PROGRAMS→ CHANGE OR REMOVE PROGRAMS→ .PRINT ENGINE→ CHANGE/REMOVE. This opens the menu displayed in Illus. 33.

Remove

3. To **uninstall** the software, click UNINSTALL .PRINT ENGINE.
4. Once you confirm the following window with Ok, all .print Engine components will be removed. You will receive the confirmation shown in Illus. 34:
Uninstallation complete; lastly, CLOSE the .print Engine installation menu.



Illus. 33 Uninstalling .print Engine

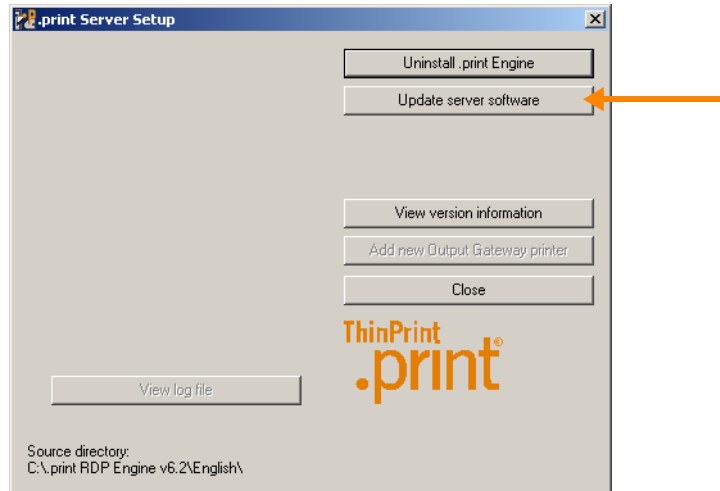


Illus. 34 .print Engine successfully uninstalled

Update Every ThinPrint license includes a 12-month update service.

- To **update** .print Engine to a higher version, select UPDATE SERVER SOFTWARE (Illus. 35) in step 3.

For the following steps see [Page 9](#).



Illus. 35 Updating .print Engine

End User License Agreement

IMPORTANT! PLEASE READ CAREFULLY: This User License Agreement „ULA“ is a legally valid contract between you (either as a natural person or as a legal entity) and ThinPrint GmbH concerning the ThinPrint product as named above, which includes computer software and may contain additional media, printed matter, and documentation in online or electronic form (this bundle is called the SOFTWARE PRODUCT) . This SOFTWARE PRODUCT may include amendments or appendices to the present ULA. BY INSTALLING THE SOFTWARE PRODUCT ON A COMPUTER, BY COPYING IT OR BY OTHERWISE USING IT, YOU AGREE TO THE REGULATIONS OF THIS ULA AND ARE LEGALLY BOUND BY THEM. IF YOU DO NOT AGREE TO THE REGULATIONS SET FORTH IN THIS ULA, YOU ARE NOT ENTITLED TO INSTALL OR USE THE SOFTWARE PRODUCT, BUT YOU MAY RETURN IT TO THE PLACE OF PURCHASE FOR A FULL REFUND OF THE PRICE OF THE SOFTWARE PRODUCT.

The SOFTWARE PRODUCT is protected by copyright laws and by international copyright laws and treaties on intellectual property. The SOFTWARE PRODUCT is licensed, not sold. All legal regulations for copyright laws and sales contract law of German Civil Code („BÜRGERLICHES GESETZBUCH“) apply unless otherwise specified in this ULA.

1. RIGHTS OF LICENSE. On condition that you meet all regulations in this ULA, this ULA grants you the following rights:

a) Types of Software. The SOFTWARE PRODUCT includes one or more of the following types of Software: „Server software“, which will provide services or functions on a computer used as a server (the computer which runs the server software will be called „server“ in the following), and „Client software“, which will allow a computer, a workstation, a terminal, a portable PC, a pager, a telephone, a „Smart Phone“ or any other electronic device (the devices named here will in the following be referred to as „device“), to access the services or functions of the server software or otherwise make use of them.

b) Purchasable SOFTWARE PRODUCTS are licensed using license keys, which must be entered in the License Manager of the server software. Said license keys are composed of a series of numbers and letters divided into 5 blocks (XXXX-XXXX-X-XXXXX-XXXX). The first block (a block of letters) in a license key (hereafter „Block 1“) identifies the type of license. The third block (a block of numbers) in a license key (hereafter „Block 3“) defines the number of clients for client-based licensing. All licenses, including licenses marked as demo licenses of the SOFTWARE PRODUCTS, are initially valid for 30 days. With the exception of demo licenses and master licenses, all licenses of the SOFTWARE PRODUCTS are valid beyond the initial 30 days after they have been activated (activation). ThinPrint may refuse activation if

the respective license key is not intended for use with the SOFTWARE PRODUCT in the installed version. By accepting the terms of this ULA you agree to provide all information required for the activation process completely and truthfully. Master licenses are first valid after the signature of a specific license agreement and only if you are named as the user of the SOFTWARE PRODUCTS in this agreement. A valid license key initially entitles you to the use of the SOFTWARE PRODUCT in version current at the time of purchase. The use of new versions of the SOFTWARE PRODUCT released after the date of purchase („UPDATES“; see also Paragraph 4 of this agreement) is only authorized with a valid update authorization.

c) Not For Resale Software. If the SOFTWARE PRODUCT is designated as „Not for Resale“ or „NFR“, the use of the SOFTWARE PRODUCT is limited to purposes of demonstration, testing, or evaluation; all other use is prohibited. You do not have the right to resell or otherwise exchange the SOFTWARE PRODUCT for compensation.

d) Condition of License. Where the server software is deployed as print server software in a server farm with one or more terminal servers, each of said terminal servers from which print data is created, either directly or collaterally, within the context of a terminal session, will be licensed with an equivalent or superior version of the ThinPrint's Application Server Engine license.

e) Software as teaching version. If the SOFTWARE PRODUCT is marked as „teaching version“, you may only use the SOFTWARE PRODUCT as the acknowledged user of a recognized educational institution. If you are not an acknowledged user of a recognized educational institution, this ULA will not grant you any rights whatsoever. To find out whether you are an entitled user of a recognized educational institution, please contact ThinPrint GmbH, Alt-Moabit 91a/b, 10559 Berlin, Germany.

f) Additional Software. All software, with which ThinPrint GmbH provides you and which updates or extends the original SOFTWARE PRODUCT, is part of the SOFTWARE PRODUCT and subject to the regulations of this ULA, unless such updates or extensions include other terms of use. All software which is provided to you together with the SOFTWARE PRODUCT that includes a separate user license agreement is licensed to you under the regulations of this license agreement; unless the other ULA contains special regulations about the use of such software, the regulations of this ULA apply.

g) Reservation. ThinPrint GmbH explicitly reserves all rights not explicitly granted.

2. LICENSING OF .PRINT SOFTWARE COMPONENTS

.print Server Engine: The software of .print Server Engine may be installed on any Windows server. Every server which is installed with the software of .print Server Engine must have at least one valid license for the .print Server Engine (THPS in „Block 1“). If the .print Server Engine is run on a server which functions as a print server for one or more terminal servers (server farm), all terminal servers in the server farm which initiate .print print jobs in direct or indirect association with a terminal session and issues these print jobs via this print server must each have at least one valid .print Application Server Engine license (THPR in „Block 1“). Said .print Application Server Engine licenses must have the same or higher version number as the .print Server Engine on the print server.

.print Application Server Engine: The software of .print Application Server Engine may be installed on any terminal server. Every terminal server which is installed with the software of the .print Application Server Engine must have at least one valid license for the .print Application Server Engine (THPR in „Block 1“).

.print Remote Desktop Printing Engine: The software of .print Remote Desktop Printing Engine may be installed on any terminal server. Every terminal server which is installed with the software of the .print Remote Desktop Printing Engine must have at least one valid license for the .print Remote Desktop Printing Engine (TRDP in „Block 1“).

.print Queue Manager: The software of .print Queue Manager may be installed on any terminal server. Every server which is installed with the software of the .print Queue Manager must have one valid license for the .print Queue Manager PS license (THSP in „Block 1“) and one for .print Server Engine license (THPS in „Block 1“). If the software of the .print Queue Manager is installed on a terminal server, a valid .print Queue Manager TS license (THRP in „Block 1“) and a .print Application Server Engine license (THPR in „Block 1“) are enough for this server.

.print Connected Client Gateway: The software of the .print Connected Client Gateway may be installed on any client computer. Every server that addresses .print print jobs directly or indirectly to a client machine configured as a .print Connected Client Gateway must have a valid .print Server Engine license (THPS in „Block 1“). Every terminal server that addresses .print print jobs directly or indirectly to a client machine configured as a .print Connected Client Gateway must have a valid .print Application Server Engine license (THPR in „Block 1“). For every .print Connected Client Gateway that connects to a server on which the .print Connection Service is running, said server must have a valid .print Connected Client Gateway license (THCG in „Block 1“). The number in „Block 3“ of the license keys shows the number of available .print Connected Client Gateway licenses.

.print Connected Mobile Client: The software of the .print Connected Mobile Client may be installed on any mobile end device. The use of the software on stationary end devices is not allowed. Every server that addresses .print print jobs directly or indirectly an end device configured as a .print Connected Mobile Client must have a valid .print Server Engine license (THPS in „Block 1“). Every terminal server that addresses .print print jobs directly or indirectly to an end device configured as a .print Connected Mobile Client must have a valid .print Application Server Engine license (THPR in „Block 1“). For every mobile end device installed with a .print Connected Mobile Client that connects to a server on which the .print Connection Service is running, said server must have a .print Connected Mobile Client license (THCT or THCG in „Block 1“). The number in „Block 3“ of the license keys shows the number of available .print Connected Mobile Client licenses.

.print SDK Runtime license: The software of SDK Runtime license may be installed on any server. Every one of these servers that addresses .print print jobs directly or indirectly to a client machine must have a valid .print Server Engine license (THPS in „Block 1“). For each client machine that simultaneously connects to a server on which the .print Connection Service is running and receives .print print jobs, said server must have a .print SDK Runtime license (THCN in „Block 1“). The number in „Block 3“ of the license keys shows the number of available .print SDK Runtime licenses.

.print Host Integration Service: The software of the .print Host Integration Service may be installed on any Windows server. Every server which is installed with the software of .print Host Integraion Service must have at least one valid license for the .print Host Integraion Service (TPHS in „Block 1“). Terminal servers, which receive print jobs from a server with installed .print Host Integration Service must each have at least one valid .print Application Server Engine license (THPR in „Block 1“). Said .print Application Server Engine licenses must have the same or higher version number as the .print Host Integraion Service on the server that sends the print jobs.

.print Server Engine Unix: The Software of .print Server Engine Unix may be installed on any server with a Unix-compatible operating system. Every server which is installed with a .print Server Engine Unix must have at least one valid license of the .print Server Engine Unix for the corresponding Unix version.

3. DESCRIPTION OF OTHER RIGHTS AND LIMITATIONS. Transfer of software. You are entitled to transfer server software from one computer to another, provided it is removed from the computer from which it was transferred. Leasing. You are not entitled to lease the SOFTWARE PRODUCT, or to lend it or to loan it. Transfer to third parties. The first user of the SOFTWARE PRODUCT may transfer the SOFTWARE PRODUCT and this ULA once and permanently to a user. This transfer must include all parts of the SOFTWARE PRODUCT (including all component parts, the media and printed matter of this ULA). Such a transfer may not be on commission or be of any other indirect form of transfer. The recipient of such a sole transfer implicitly agrees to this ULA, including the obligation to not further transfer this SOFTWARE PRODUCT or this ULA. Note for users. You are under the obligation to inform all users of the SOFTWARE PRODUCT about the provisions of this ULA. Limitations concerning reverse engineering, de-compiling and disassembling. You are not entitled to reverse engineer, de-compile or disassemble the SOFTWARE PRODUCT, unless and only in so far as statutory law explicitly disregards this provision. Comparative and performance tests. You are not entitled, without prior written consent of ThinPrint GmbH, to reveal the results of comparative tests of the server software or of the client software to third parties. Limitation on versions of the software. The server software carries a distinct version or release number (e.g. „3.5“). The ULA allows you to keep one single copy of the server software of the same (or any lower) version number as the version number of the server software that is shown above on a single computer. Termination. Regardless of other rights, ThinPrint is entitled to terminate this ULA when you violate the provisions of this ULA. In that case you are under the obligation to destroy all copies of the SOFTWARE PRODUCTS and all its component parts. Agreement to the utilization of data. With regard to any technical data which you have revealed or will reveal to ThinPrint GmbH, for example in connection with support services related to the SOFTWARE PRODUCT („support services“), you agree that ThinPrint GmbH (and its subsidiaries and representatives) may, for their own business purposes including product support and development, collect, store, process and use such data. ThinPrint GmbH is under the obligation to make use of such data only in anonymous form.

4. UPDATES. If the SOFTWARE PRODUCT is an update of another product, to use the SOFTWARE PRODUCT you must have an appropriate license for a product which has been named as suitable for the update by ThinPrint GmbH. A SOFTWARE PRODUCT that constitutes an update replaces and/or extends (and possibly deactivates) the original basic product. You may only use the new, updated SOFTWARE PRODUCT in accordance with the provisions of this ULA.

5. INTELLECTUAL PROPERTY RIGHTS. All property rights and intellectual property rights of the SOFTWARE PRODUCT (including but not limited to images, photographs, animation, video, audio, music, text and applets which are part of the SOFTWARE PRODUCT) and every copy which you are entitled to make according to the ULA remain with ThinPrint GmbH or its suppliers. All property rights and intellectual property rights of content which can be accessed using the SOFTWARE PRODUCT are the property of the respective owner of that content and may be protected by the applicable copyright laws or other laws or

agreements about intellectual property. This ULA does not grant you any right to use such content. If this SOFTWARE PRODUCT contains documentation which is only provided in electronic form, you may print one copy of this electronic documentation. You are not entitled to copy any printed matter accompanying the SOFTWARE PRODUCT.

6. **BACKUP COPY.** You may retain the original media on which the SOFTWARE PRODUCT was supplied by ThinPrint GmbH after the installation of one copy of the SOFTWARE PRODUCT in accordance with this ULA, solely for archival purposes or for the renewed installation of the SOFTWARE PRODUCT on the same computer on which it was installed before.

7. **SOFTWARE ON TWO TYPES OF STORAGE MEDIA.** You may have been supplied with the SOFTWARE PRODUCT on more than one type of storage media. Independent of the type or size of the media supplied, you may only use one single medium which is appropriate for your one single computer. You are not entitled to use the other medium on another computer. You are not entitled to lend, loan, lease, or otherwise transfer to other users the other medium, unless for a permanent transfer of the SOFTWARE PRODUCT as described above.

8. **WARRANTEE.** ThinPrint GmbH wishes to emphasize that it is technically not possible to develop software in such a way that will ensure its working without errors in connection with all applications and under all circumstances. The program does have to perform the functions contractually agreed upon accurately. An „error“ in the software as defined in this agreement is constituted if the software functions are not performed in accordance with the use stipulated in the contract or with normal use, if wrong results occur; if the running of the program is interrupted, uncontrolled, or if the use of the software is impeded or prevented in any other form averse to its function. Rights of warranty are granted under contractual law as set down in by German Civil Code (BGB). You agree to grant ThinPrint GmbH the necessary time and opportunity to undertake measure of improvement. ThinPrint GmbH has the right to two rectify deficiencies. Should rectification of deficiencies fail or be prolonged beyond a reasonable period, you have the right to either withdraw from this contract or demand a reduction in the purchase price.

9. **LIABILITY.** The software is tested and checked for its general adequacy by ThinPrint GmbH. Liability only includes damage that results from gross negligence or intentional damage resulting from this use of the software. Liability for gross negligence or intentional damage is limited to foreseeable damages. This limitation of liability also applies to prior inability of ThinPrint GmbH. The guarantee is valid for 24 months after the installation. You acknowledge that as part of your obligation to minimize damage, you are specifically obliged to backup your data regularly. You will take all reasonable security measures in the case of an assumed error in the software.

10. **LIMITATIONS CONCERNING EXPORT.** You hereby agree that you will not export or re-export to a country not part of the European Union or make accessible to a natural person or legal entity by export or re-export the SOFTWARE PRODUCT, any part of it or a process or service which is the immediate result of the SOFTWARE PRODUCT (the aforementioned is subsumed under „limited components“)

11. **THE CONTRACT AS A WHOLE.** This ULA (including all appendices or extensions to this ULA which are part of the SOFTWARE PRODUCT) and the client access license (if applicable) constitute the entire contract between you and ThinPrint GmbH with regard to the SOFTWARE PRODUCT and support services (if applicable). They take precedence over all prior or simultaneous verbal or written information or offers regarding the SOFTWARE PRODUCT or any other issue covered by this ULA. If you have not been granted an individual user license agreement and it restricts or breaches the validity of this ULA, the terms of this ULA apply. The ULA is always supplemented by the General Terms of Trade, which can at any time be downloaded from www.thinprint.com/gtt and printed, and read.

12. **ADDITIONAL AGREEMENTS, LEGAL VALIDITY.** Additional agreements and extensions of the contract are required to be in writing to be valid. If one of the provisions of this ULA should be ineffective or should become ineffective, the remaining provisions of this ULA will remain effective. The ineffective or missing provision shall be replaced by an economically and legally valid equivalent.

13. **JURISDICTION AND APPLICABLE LAW.** Sole jurisdiction for all disputes arising from this contractual relationship is Berlin. Applicable material law is German law.

ThinPrint GmbH
10559 Berlin/Germany

March 2005 (.print v05)

Glossary

<i>Activation key</i>	Entering the activation key in License Manager enables unlimited application of the .print software. An activation key is obtained by submitting license and registration keys to ThinPrint GmbH.
<i>Autocreated printers</i>	.print AutoConnect is the name of the .print tool for auto-created printers. It can be run on any Windows Server. .print AutoConnect automatically creates client printer objects on the server.
<i>Bandwidth</i>	The capacity of a network or data connection for digital transmission, usually measured in bit/second (bit/s, bits/sec, or bps) or in Kilo-bit/ second (kbit/s, kbits/sec, or kbps).
<i>Client</i>	The term client signifies a device which connects to, requests data from, and/or starts an application on, a server. It receives, for example, print data from the server and forwards it to a printer. Typical clients are: desktop PCs, notebooks, thin clients, PDAs, and mobile telephones.
<i>COM</i>	Component Object Model; fundamental communication model for icon communication under Windows NT.
<i>Current printer</i>	Setting in .print Client Manager: A document is printed with the current printer if a client has only <i>one</i> printer, or if the printer can't be determined by <i>ID</i> . Current printer can also be used to set the default printer at the server when using .print AutoConnect (with the option DEFAULT AT SERVER).
<i>Data type</i>	Several types are usually supported for printing under Windows. The two most commonly used, expanded metafile (EMF) and print-ready (RAW), affect performance on both client and print server machines differently.
<i>Device</i>	Here: thin client, print server, printer (print device), print appliance or print server (print box)
<i>Driver Free Printing</i>	To avoid printer driver conflicts on Windows servers, .print delivers a virtual printer driver. Called <i>ThinPrint Output Gateway</i> , this driver delegates print job rendering to Windows 32-bit clients, so that no conventional printer drivers have to be installed on the server (Driver Free Printing). A positive side effect is that server load is drastically reduced during print job rendering.
<i>EMF</i>	<p>EMF (enhanced metafile) is default data type for most Windows NT/2000/XP/2003 programs. Unlike RAW format, printed documents in EMF are converted to metafile format.</p> <p>EMF files are usually smaller than RAW files containing the same print job. In server-based computing, only the first half of a print job is generated on the Terminal Server (in consideration of system performance). The main work is performed by the client machine, which improves the Terminal Server's performance.</p>
<i>Encryption</i>	see SSL

- Fat client* see *Rich Client*
- License key* All .print software requires a license key. The key has the format: THxx-xxxx-x-xxxxxx-xxxx (32 bit). License Manager uses the license key to generate a registration key according to system configuration. Both license key and registration key are required to request the activation key.
- Local resources* *Local* in this sense means available to or installed upon the selected computer. Client operating systems always search first for a local printer driver. When printing on the client side, then, the printer driver is first sought on the client computer, and only if necessary is a driver downloaded from the server.
- Output Gateway* ThinPrint's virtual printer driver
- .print AutoConnect* We also offer auto-create printers (aka auto-connect, auto-mapping). And to do so, we support printer classes: For example, all HP printers can use the same HP driver, so you can group them into a class. You write a template where all HP printers are sent to this one driver. The software even allows a wild card in the printer name – we're the only system in the world who let's you do that! So you can use HP* as your printer name, and any printer starting with HP will be sent to the HP driver. This drastically reduces the number of drivers on your server.
- .print Client* On the client side, *.print Client* is generally responsible for receiving print data, decompressing it, and sending it to the print device. Many *.print Clients* are available for different end devices and areas of deployment: for all Windows versions incl. Windows CE, PocketPC, and Smartphone, for Linux, Solaris, DOS, Win OS/2, Symbian (e.g. UIQ and Nokia series 60 and 80), Java, ActiveX, as well as for print servers (print boxes) and network printers with their own network cards.
- .print Engine* The server component *.print Engine* is the actual core of the ThinPrint *.print* framework. It provides complete printer driver management including Driver Free Printing. *.print Engine* performs two main functions:
- Print job compressing and streaming
 - Provision of the virtual printer driver ThinPrint Output Gateway (enables a radical reduction of printer drivers on printing computers = Driver Free Printing).
- .print Monitor* *.print Monitor* is a component of the *.print Engine* software used for setting up ThinPrint Ports.
- .print Viewture* Tool for the client-side print preview with Output Gateway. Viewture consists of the components *TPView.dll* and *TPView.exe* with the following functions and features:

	TPView.dll	TPView.exe
page preview	×	
zoom	×	×

	TPView.dll	TPView.exe
leaf	×	×
save in .tpf file format	×	
open .tpf file format		×
print	×	×
installation with .print Client	×	
can be downloaded from www.thinprint.com		×

Print device Contrary to popular nomenclature, hardware which produces printed material is called a print device and NOT a printer. Print resolution is measured in DPI (Dots Per Inch). The higher the DPI value, the better the resolution.

Printer The point of interface between operating system and print device is called the printer. In NT architecture alone, many possible terms exist: logical printer, printer software, or printer object. Printer settings include, among others, the designation of a connection (i. e., LPT1 or ThinPort), the printer driver (this is normally included by the manufacturer), authorization of share names, etc. In Windows, every printer is represented in the PRINTERS AND FAXES folder by an icon with an obvious name.

There is generally not a one-to-one relationship between printer and print devices. Several printers for a single print device, for example, signify that either the print device is connected to several computers, or that many printers with different parameters for the same print device have been set up on a computer.

Printer driver Printer drivers are programs which enable communication between client applications and print devices. Each print device requires unambiguous commands which are specific to that device, to employ such print functions as color, margin, format, etc. An operating system comprehends these individual commands for specific print devices through the printer driver.

Printer object Under Windows: a printer created over START→ SETTINGS→ PRINTERS; it appears with its name in the PRINTERS AND FAXES folder.

Printer queue The number of documents which are to be printed from a particular print device and/or are already waiting for processing is referred to in NT terminology as the printer queue. Under NetWare and OS/2, the term *printer queue* is synonymous for *printer*.

Printer software Printer software is the commonly used name for *logical printer* or *printer*.

Print job Print jobs are composed of a source code in the language of the relevant printer. This source code contains both print data, such as a text or picture, and print device commands such as form feed or page format.

<i>Print server services</i>	Print server services is the term for the print server software which handles communication with non-Windows clients. Because a print job from a UNIX client is different than one from a Macintosh client, there are different print server services. These can change the parameter for data type as needed, for instance.
<i>Queue</i>	see <i>Printer queue</i>
<i>RDP</i>	Remote Desktop Protocol; communication protocol between multiuser NT (4.0, 2000, XP, or 2003) servers and clients under a MS Windows operating system. The name of the NT service is <i>Terminal Services</i> , and the connection type under Windows XP is named <i>Remote Desktop Connection</i> .
<i>Remote Desktop Connection</i>	see RDP
<i>Rendering</i>	A printer driver is used to translate a print job into printer-specific format.
<i>Rich client</i>	Computer with high performance hardware, Win32 operating system (= PC). Applications can be locally installed and run.
<i>Server based Computing</i>	A server-centric basis for enabling user access to applications, with application logic being run on the server and only user interface transmitted through the network.
<i>Spooler</i>	Print spooler describes the number of those programs or DLLs (Dynamic Link Libraries) which receive, process, temporarily save, chronologically sort, and distribute queued print jobs. With network printers, the spooler has a client component and a server component. The client component is normally found where the application is being run. The server component is generally where the print device is installed, at the print server, for example.
<i>Spooling</i>	Print jobs are temporarily stored as files on a hard disk. This procedure is known as spooling and is only one of the several functions of the spooler. Unspooling is the process of reading this file and sending it to the print device.
<i>SSL</i>	To establish a secure connection with SSL, the communication partners must first agree on the cryptographic methods and parameters to be used. Basically, SSL offers the options of key exchange, systematic encryption, and the calculation of a cryptographic proof sum. There are various methods that can be used with each of these options.
<i>Template</i>	Printer object used as a "model" to enable automatic client printer connection to .print Engine over .print AutoConnect.
<i>Terminal Server</i>	a server with Microsoft Terminal Services
<i>Terminal Services</i>	a Windows 2000 service under Windows 2000 Server, Windows XP Professional, or Windows Server 2003

<i>Thin client</i>	a minimum performance computer with only very elementary hard- and software components (no hard drive) In a server/client architecture, a client system on which no application programs are run. Instead, all applications are processed at the server.
<i>ThinPrint Output Gateway</i>	ThinPrint's virtual printer driver
<i>ThinPrint Port</i>	To print with .print, printers are associated with ThinPrint Ports on the machine that creates the print jobs.

Abbreviations

DLL	Dynamic Link Library
DSL	Digital Subscriber Line
(E)ULA	(End) user license agreement
EMF	Enhanced Metafile
ID	Identification (number)
ISDN	Integrated Services Digital Network
LAN	Local Area Network
LPD	Line Printer Daemon
LPR	Line Printer Remote
LPT	Windows Line printer Port
Modem	Modulator/Demodulator
Output Gateway	ThinPrint Output Gateway
PCL	Printer Command Language
RAW	Standard Print Data Type
RDP	Remote Desktop Protocol (Microsoft)
RDP Engine	.print Remote Desktop Printing Engine (ThinPrint)
RFC	Request for Comments; Series of documents, begun in 1969, which describe the Internet Protocol Suite and relevant experiments
SBC	Server-based Computing
TCP/IP	Transport Control Protocol/Internet Protocol
TP	ThinPrint
ULA	see EULA
VCP	Virtual Channel Protocol (= ICA or RDP)
WAN	Wide Area Network
Win32	Windows 9x, ME, NT 4, 2000, XP, and 2003
WinCE	Windows CE
WinNT	Windows NT 4, 2000, XP, and 2003

.print Engine feature comparison

	.print Application Server Engine	.print RDP Engine	.print Server Engine	.print Server Engine Unix	.print Desktop Engine	.print RDP Engine XP
Recommended server environments						
• Terminal Servers with Windows 2003 or 2000	● ^a	●	–	–	–	–
• Other Windows 2003 or 2000 servers	–	–	● ^a	–	–	–
• Linux, Solaris or AIX servers	–	–	–	●	–	–
• PCs with Windows XP Prof.	–	–	–	–	●	●
• PCs with Windows 2000 Prof.	–	–	–	–	●	–
Supported client environments						
• .print Clients supporting Driver Free Printing: Windows 9x, ME, NT, XP, 2000, 2003	●	●	●	–	●	●
• Other .print Clients: Unix, Java (e.g. Mac OS X, OS/2), Windows Mobile, CE, 3.x, MS-DOS, Symbian UIQ and Series 60	●	–	●	●	●	–
Plug-and-play installation						
	●	●	–	–	–	●
MMC configuration						
	●	–	●	–	●	–
Encryption						
	●	–	●	–	●	–
Driver Free Printing (including Advanced Adaptive Compression)						
	●	●	●	–	●	●
Native printing (including compression)						
	●	–	●	●	●	–
Several printers per user possible						
	●	–	●	●	●	–
Bandwidth control						
	●	–	●	●	●	–
Network protocols						
• TCP/IP	●	–	●	●	●	–
• ICA	●	–	● ^b	–	–	–
• RDP	●	●	● ^b	–	●	●
• LPR/LPD	●	–	●	●	●	–
Supported .print components						
• Virtual Channel Gateway	–	–	●	–	–	–
• Connected Client Gateway	●	–	●	–	●	–
• Queue Manager	●	–	●	–	–	–
• Host Integration Service	●	–	–	–	–	–

^a Windows Server 2003 x64 included

^b via .print Virtual Channel Gateway