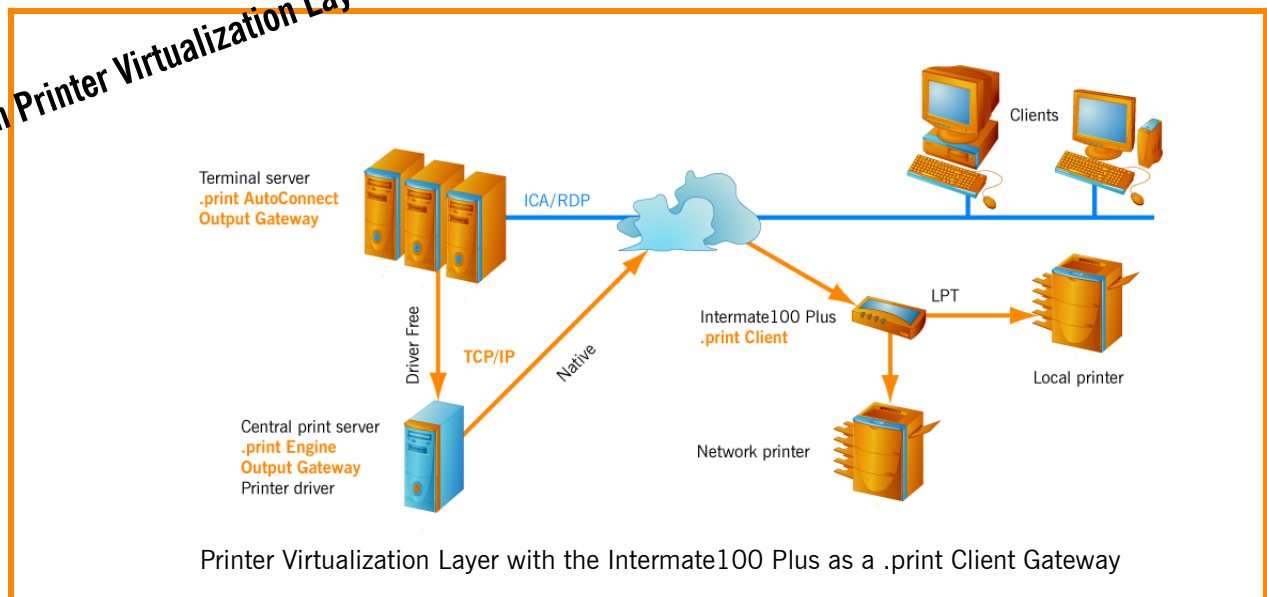


Intermate100 Plus/101 as a .print Client Gateway

Example for practice

With Printer Virtualization Layer



A **.print Client Gateway** can greatly simplify the introduction of ThinPrint .print because it can receive print jobs for an entire group of clients and printers, decompress them, and then distribute them conventionally in a local network – like a local print server. Then the .print Client is only necessary on the “local print server” for this remote LAN. Otherwise, the .print client must be installed on each end device.

The following example helps you install a .print Client Gateway using the **Intermate100 Plus or Intermate101** as a test scenario. Once you get a feel for the functionality, you can install it according to your system’s individual requirements.

With **Printer Virtualization Layer**, it is unnecessary to install printer drivers on terminal servers or virtual desktops because print jobs are sent “driver free” – in EMF format – to a central print server. The central print server renders the print data and sends it print-ready to the Intermate100 Plus or Intermate101.

Why ThinPrint .print and Client Gateway?

Sample configuration

Installation

- Printer and Intermate100 Plus/101
- Client machine(s)
- Terminal server
- Central dedicated print server

Configuration

- Network
- Intermate100 Plus/101
- Central dedicated print server
- Terminal server
- Test print

Appendix

- Additional sources
- Abbreviations

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Issued: July 14, 2008 (v25)

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Foreword

A .print Client Gateway can greatly simplify the introduction of ThinPrint .print because it can receive print jobs for an entire group of clients and printers, decompress them, and then distribute them conventionally in a local network – like a local print server. Then the .print Client is only necessary on the “local print server” or .print Client Gateway for this remote LAN. Otherwise, the .print client must be installed on each end device: PCs, printers, print servers (print boxes), thin clients, PDAs, etc. This could mean that with thin clients, for example, a firmware or BIOS update is necessary. Even mixed environments pose no problem: The .print client is installed onto all devices where simple installation is possible, and all others are served by a Client gateway.

Any machine with .print Client installed can be used as a Client Gateway (e.g., a Windows or a Linux workstation). Thin clients or external print servers with embedded .print Clients can also be used. The following example helps you install a **.print Client Gateway** using the external **Intermate100 Plus or 101** print server as a test scenario. Once you get a feel for the functionality, you can install it according to your system’s individual requirements.

An Intermate10x¹ has an embedded .print Client. It can address up to five printers:

- one local printer via LPT and/or
- up to four network printers via LPR/LPD or Raw-Socket (= Standard TCP/IP)

See also www.intermate.com.

¹ = Intermate100 Plus or Intermate101

Why ThinPrint .print and Client Gateway?

	General .print	.print Client Gateway with Interimate10x
Use	<ul style="list-style-type: none"> • Bandwidth control and print data compression, especially for server based environments • Print data encryption • Driver Free Printing • Printer Virtualization Layer (formerly Driver Free Native Printing) 	Not necessary to install .print Client on every client device; it's embedded in the Interimate10x print server
Function	.print Server component provides bandwidth control, print data compression, streaming, and encryption, then sends print data to the .print Client component.	Receipt and decompression of print data, transmission to local and/or network printer(s)
.print components to be installed	Windows, Unix, AS/400, or IBM mainframes: <ul style="list-style-type: none"> • .print Engine • .print Client Windows only: <ul style="list-style-type: none"> • .print AutoConnect • .print Connection Service if necessary • .print Virtual Channel Gateway if necessary 	<ul style="list-style-type: none"> • .print Engine onto the machines, where the print jobs are initiated (e.g., terminal servers or central dedicated print servers) • .print Client (TCP/IP) is embedded in the Interimate10x
ThinPrint licenses	Windows: <ul style="list-style-type: none"> • .print Application Server Engine and/or .print Server Engine • .print Connected Gateway if necessary Others: <ul style="list-style-type: none"> • .print Engine Unix • .print Engine AS/400 • .print Engine Host 	Windows: <ul style="list-style-type: none"> • without central print server/s: .print Application Server Engine license • with central print server/s: .print Server Engine license on each print server and .print Application Server Engine license on each terminal server Others: <ul style="list-style-type: none"> • .print Engine Unix • .print Engine AS/400 • .print Engine Host

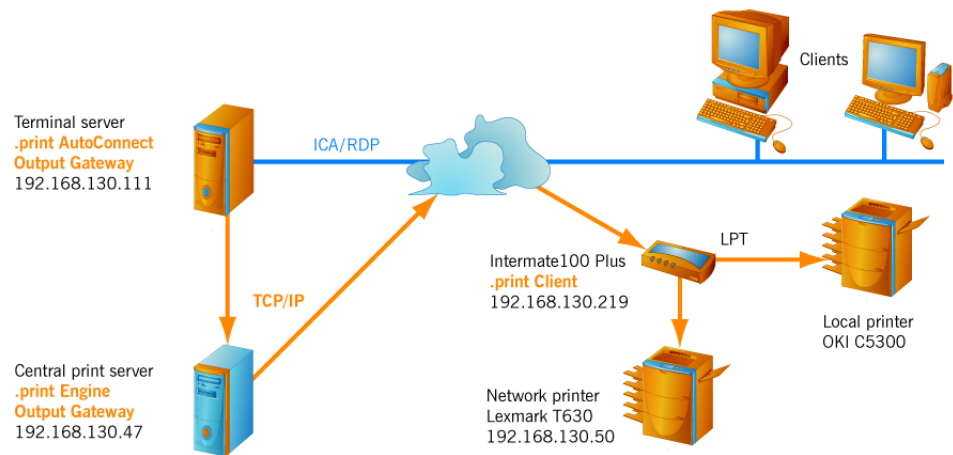
Sample configuration

By way of example, we will assume an environment with two **Windows** servers – a terminal server and a central (dedicated) print server. The components necessary for the example in Illus. 1 are:

- At least one PC (as terminal client)
- 1 Intermate10x
- 2 network printers with their own network card (= internal print server) without integrated .print Client
- 1 terminal server² – ThinPrint Output Gateway installed (.print version 7.0)
- 1 central print server – .print Engine installed (.print version 7.0)

Tips

1. .print Client Gateway (Intermate10x) works exclusively with the protocol TCP/IP.
2. The following .print (demo) licenses are necessary for this sample configuration: .print Server Engine and .print Application Server Engine



Illus. 1 Sample configuration with Intermate100 Plus

² with or without Citrix Presentation Server

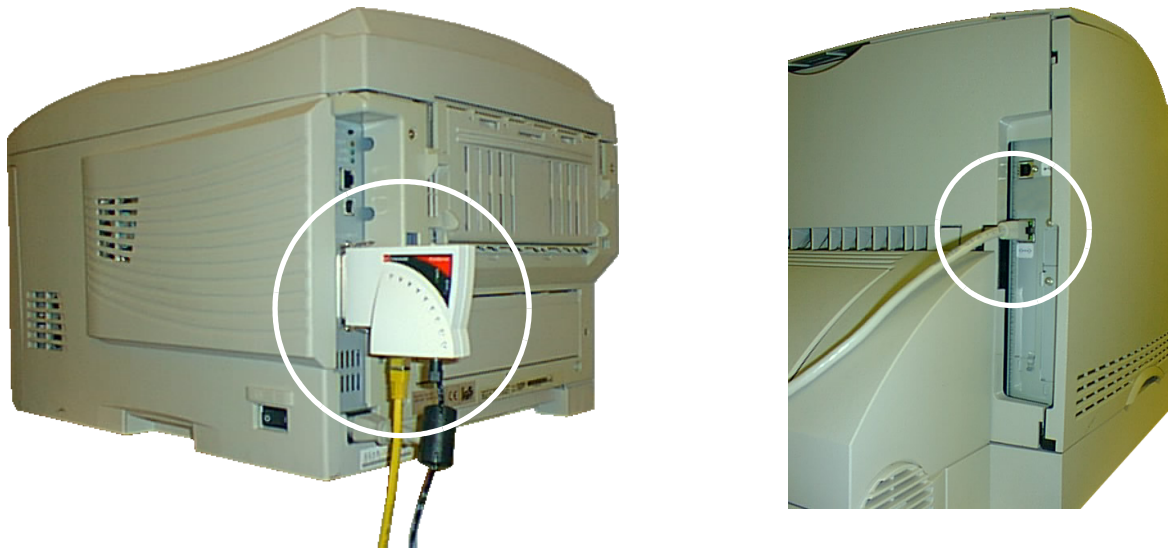
Installation

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 and supplier of each hardware device and component.

Printer and Intermate10x

- Connect a printer (here: OKI C5300) to the Intermate10x's local interface (LPT), and connect the Intermate10x to the network (left in Illus. 2).
- Connect the second printer's network card (here: Lexmark T630) to the network (right in Illus. 2).



Illus. 2 Connecting Intermate10x to the OKI printer's parallel interface and to the network (left); connecting Lexmark printer to the network (right)

Client machine(s)

- Install 32-bit Windows and a RDP or ICA client onto a PC (see Illus. 1).

Central print server

- Install the **.print Engine** onto a Windows server; see Illus. 1 and:
 - the “.print Server Engine quick installation“ manual or
 - the chapter “Installing .print Engine (per central, dedicated print server)” in the “.print Server Engine” manual; [Page 17](#).

Terminal server

- Install **.print AutoConnect** and the **ThinPrint Output Gateway** printer driver onto a Microsoft or Citrix terminal server; see Illus. 1 and:
 - the “.print Server Engine quick installation“ manual or
 - the chapter “Installing AutoConnect, Virtual Channel Gateway, and Output Gateway (per terminal server)” in the “.print Server Engine“ manual; [Page 17](#).

Configuration

Network

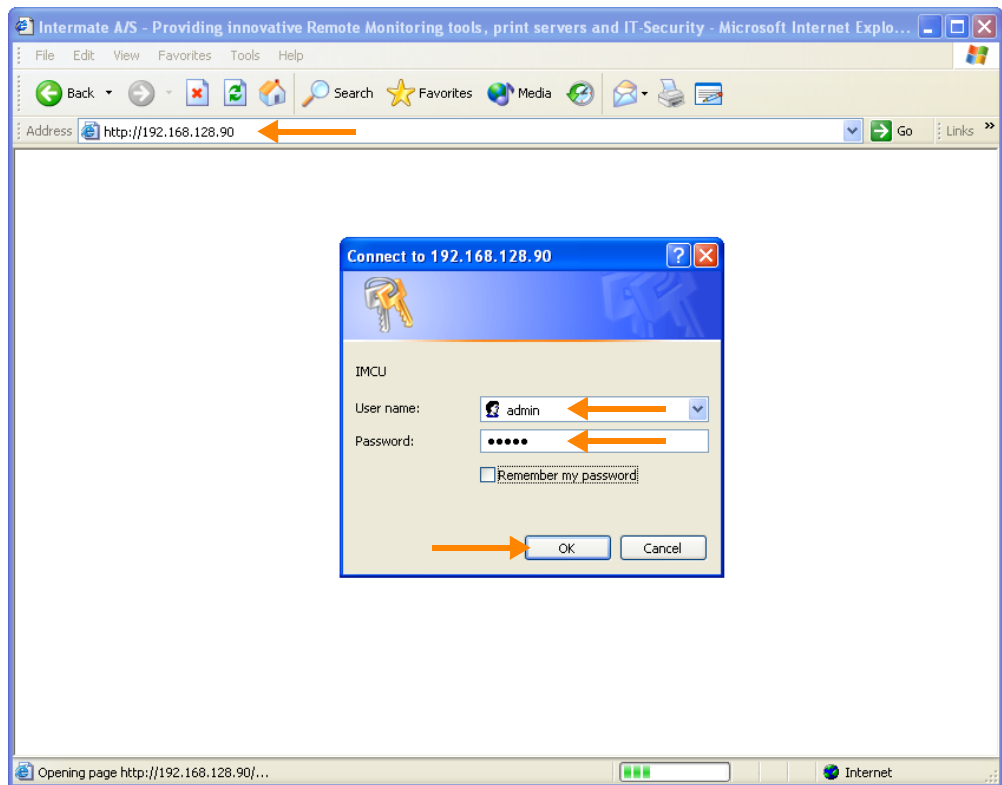
- Assign all devices IP addresses within the same subnet; in this example:
 - for the *Intermate10x* 192.168.130.219
 - for the *Lexmark* network printer 192.168.130.50
 - for the terminal server 192.168.130.111
 - for the central print server 192.168.130.47

Client Gateway Intermate10x

Configuring IP address and network printers

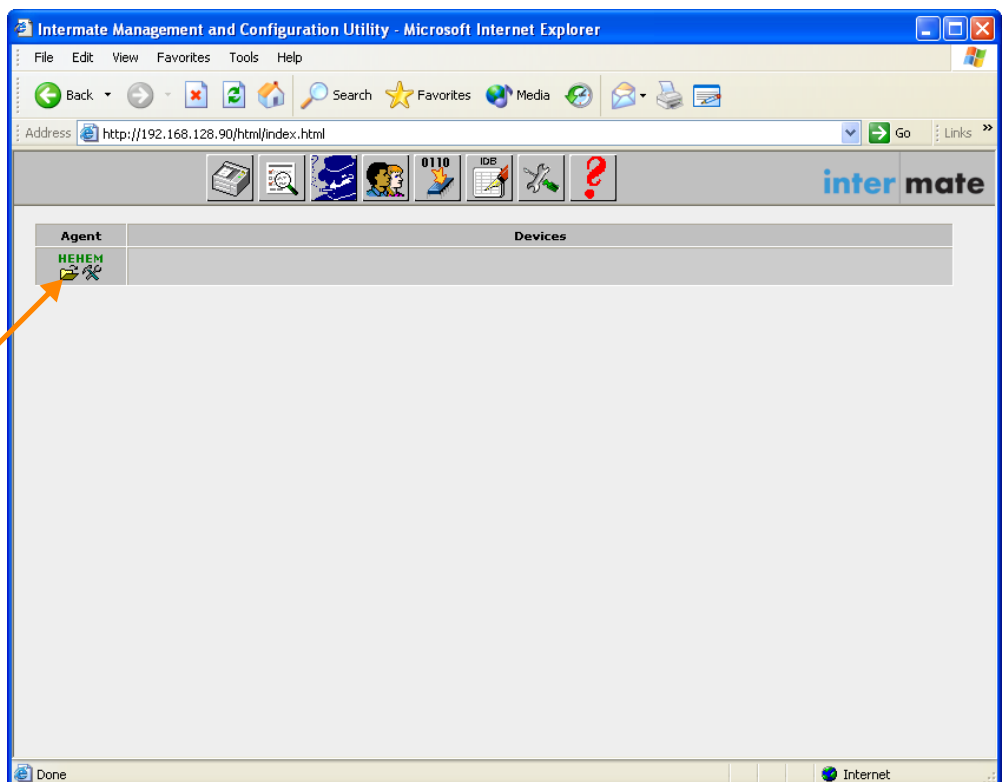
- IP address*
- If you do not know the IP address of the Intermate10x or if it is not reachable, install and start the **Intermate Management & Configuration Utility (IMCU)**³ on the PC or the terminal server.
 - Enter the IMCU’s IP address in a web browser (Illus. 3). Enter **admin** in the logon window which opens – as both USER NAME and PASSWORD (= default account and password). Confirm with Ok.

³ Included in delivery of the Intermate10x or can be downloaded at www.intermate.com/imcu



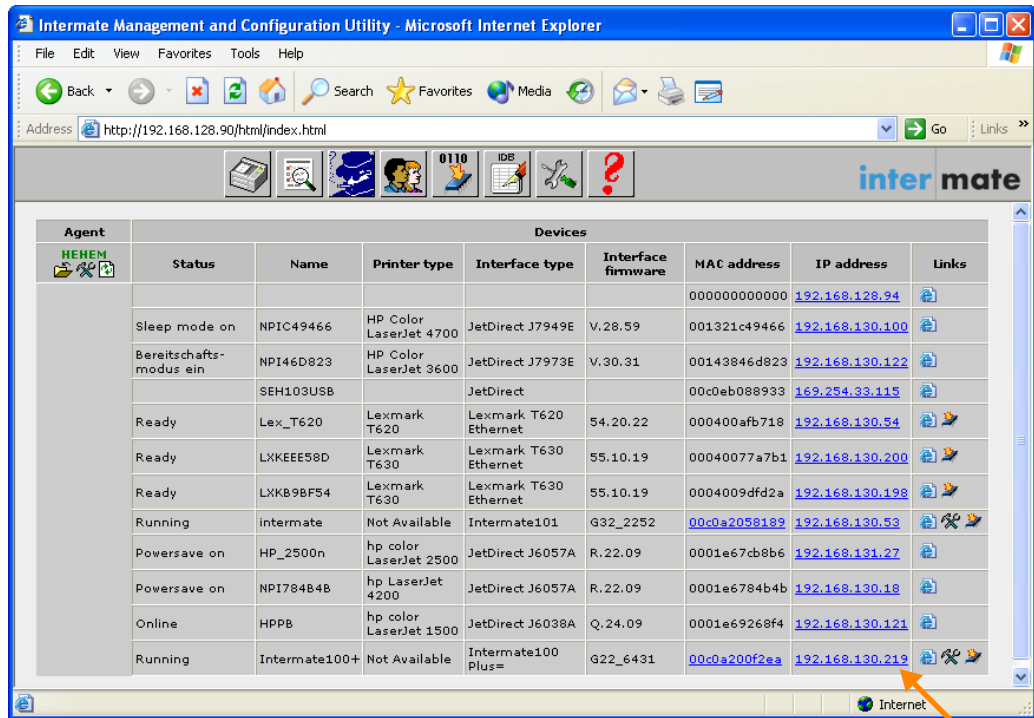
Illus. 3 Intermate Management & Configuration Utility: Login

- Expand the table of print servers (Illus. 4)



Illus. 4 Intermate Management & Configuration Utility: Select EXPAND

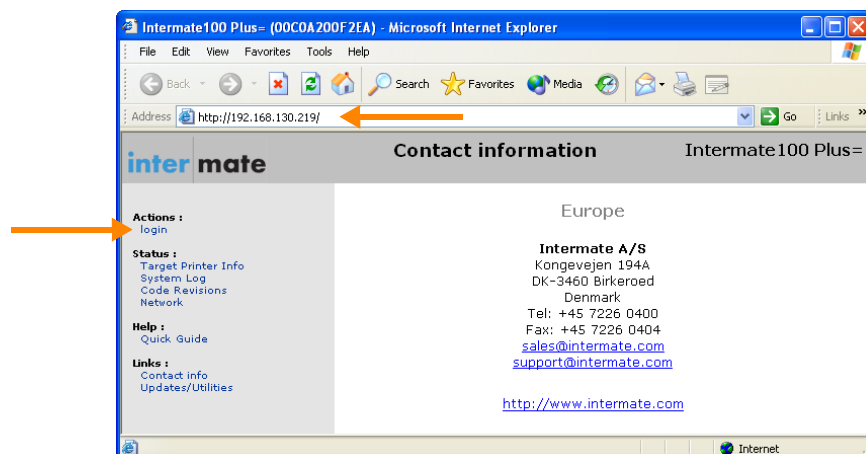
- Find the IP address of the Intermate10x here (Illus. 5). Close the IMCU. Further configuration can be made with a the Intermate10x web interface.



Illus. 5 IMCU: IP address of the Intermate100 Plus

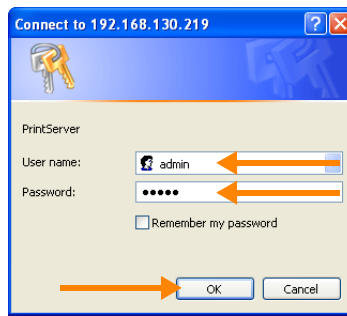
Intermate10x web interface

- Login*
- Now open the Intermate configuration page (192.168.130.219) with a web browser: Internet Explorer version 6 (!) or later or Netscape.
 - Click LOGIN (left arrow in Illus. 6).

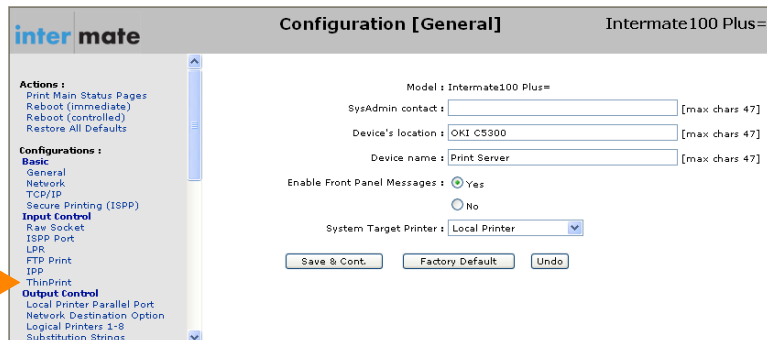


Illus. 6 Intermate configuration page: Choose LOGIN

- Enter **admin** in the logon window which opens – as both USER NAME and PASSWORD (= default account and password). Confirm with OK (Illus. 7). The Intermate main menu appears (Illus. 8).

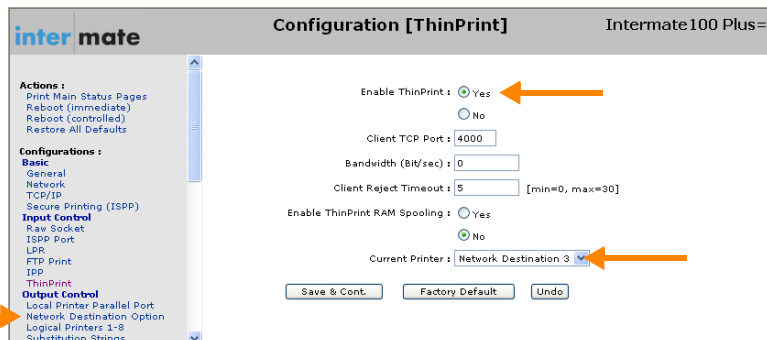


Illus. 7 Login: Enter admin twice, then click OK



Illus. 8 Intermate's main menu: Choose THINPRINT

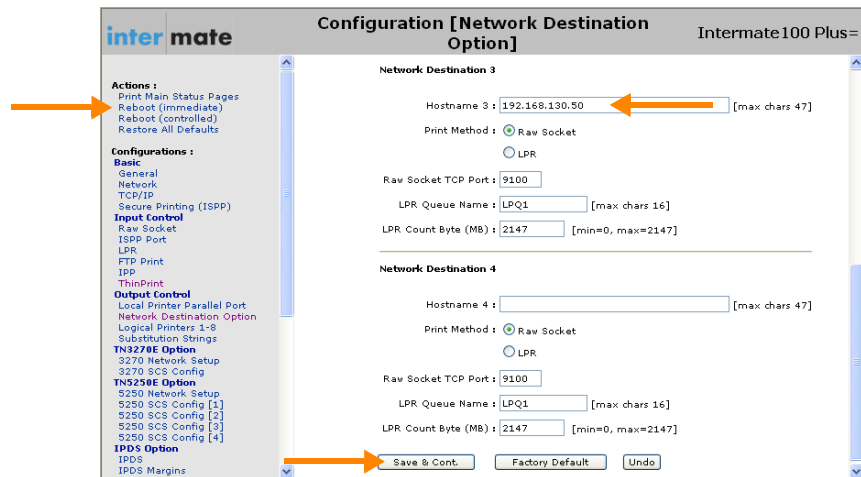
- Choose here THINPRINT (arrow in Illus. 8).
 - Choose at ENABLE THINPRINT: **Yes** (Illus. 9)
 - Choose at CURRENT PRINTER⁴: **Network Destination 3**
 - Click SAVE & CONT.



Illus. 9 ThinPrint menu: ENABLE THINPRINT: YES + NETWORK DESTINATION 3 + choose SAVE & CONT.

- Now choose NETWORK DESTINATION OPTION (left arrow in Illus. 9).
 - Enter at Hostname 3: **192.168.130.50** (Illus. 10)
 - Click SAVE & CONT.
- Click REBOOT (IMMEDIATE) to activate the new configuration (left arrow in Illus. 10).
- CONFIRM the next prompt.

⁴ = "Output to" of older Intermate print servers (= ThinPrint's default printer)



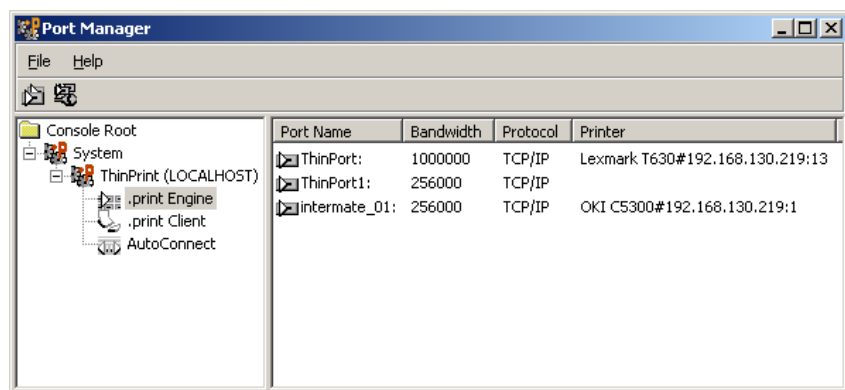
Illus. 10 Network destination menu: Enter HOSTNAME 3 and choose SAVE & CONT.

Central print server

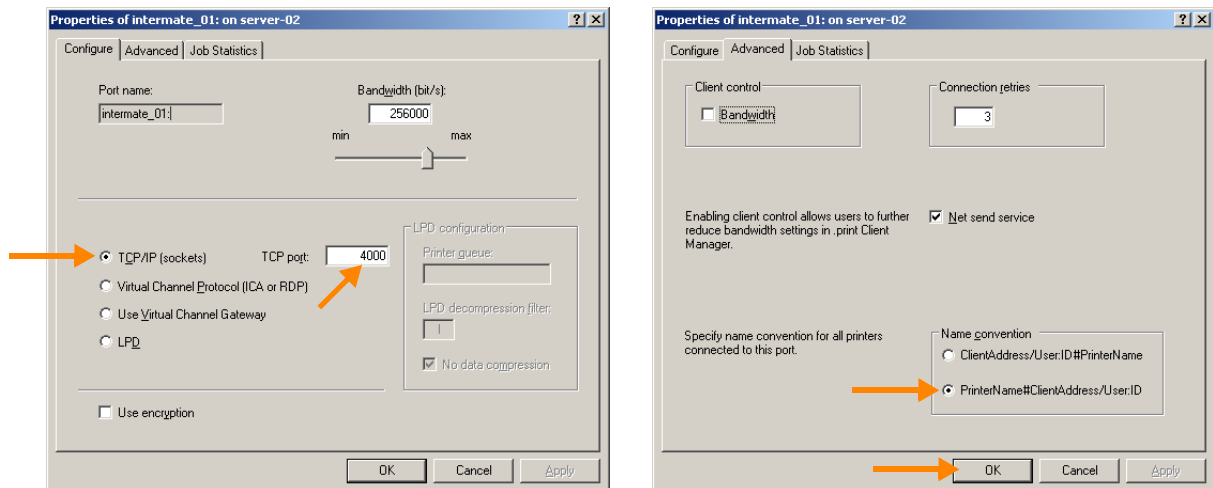
Both ThinPrint's native printing and Printer Virtualization Layer can be used with the InterMATE10x print servers.

Creating printers

- Create the relevant printers (printer objects) on the print server for both of the network printers connected to the InterMATE10x. When doing so, install the printer drivers, too. **Connect both printers with a ThinPrint port** (Illus. 11). In Port Manager (Illus. 12), select *TCP/IP* as port type (the protocol), *4000* as TCP port and specify the name convention for the printer name syntax for each used ThinPrint port.



Illus. 11 Port Manager in the MMC: printers connected to ThinPrint ports



Illus. 12 Setting printer port properties

- Next, rename the printers in the following format:

printer_name#ip_address:printer_id

Or:

ip_address:printer_id#printer_name

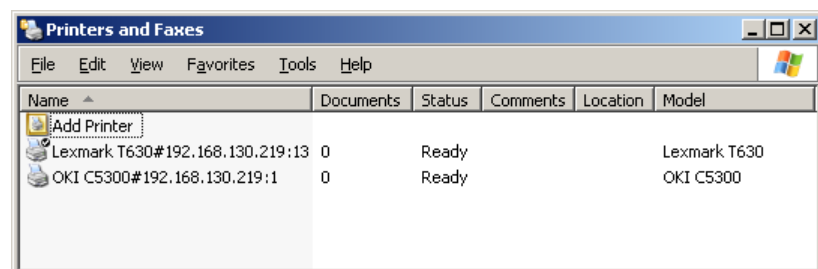
The following name convention is used below (right in Illus. 12):

printer_name#ip_address:printer_id

The IP address is the .print Client Gateway's (Intermate10x), and the printer ID is 13 for Network Destination 3 or 14 for Network Destination 4. Instead of the IP address, you can also use the host name of the Intermate10x.

In our example, this creates the two printers connected to the Intermate10x (Illus. 13):

- Lexmark T630#192.168.130.219:13
- OKI C5300#192.168.130.219:1



Illus. 13 Printers and Faxes folder on the central print server

(The printer name before the # is unimportant for addressing print data; it only serves to distinguish the printers.)

- For native printing – without Printer Virtualization Layer – share the printers shown in Illus. 13. Otherwise continue as follows:

Printer Virtualization Layer settings

- Create for each of these printers a second printer, namely an Output Gateway printer, which can be connected to any port, and **share it** (Illus. 14).
- 32 bit – Open the command prompt and change to the following directory on 32-bit systems:

%windir%\system32\spool\drivers\w32x86\3

- x64 – ... or on x64 systems:

%windir%\system32\spool\drivers\x64\3

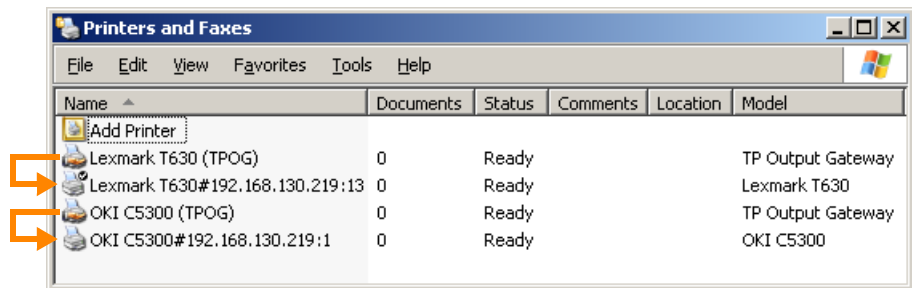
- Assign a suitable target printer to each Output Gateway printer. This is done each time with the following command (case sensitive!):

```
Rundll32 TPPrnUI.dll, TPSetOption_RUNDLL
"source_printer" DFNP "target_printer"
```

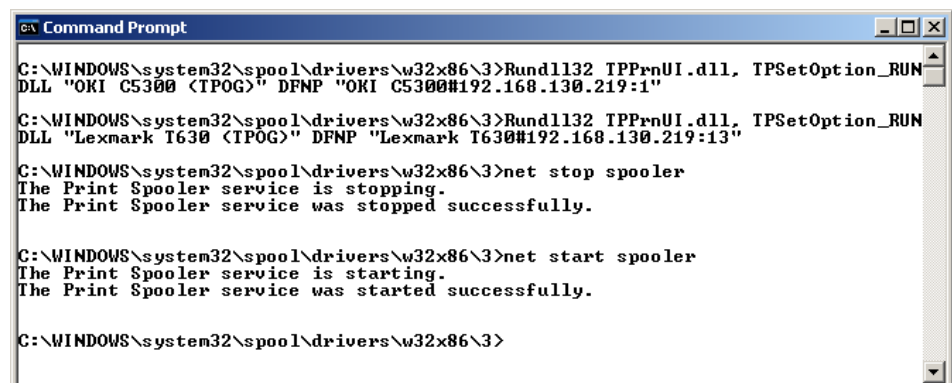
Here, the Output Gateway printer is entered as each *source_printer* and one with native printer driver as *target_printer*. Example (Illus. 14 and 15):

```
Rundll32 TPPrnUI.dll, TPSetOption_RUNDLL "Lexmark
T630 (TPOG)" DFNP "Lexmark T630#192.168.130.219:13"
```

- Lastly, restart the print spooler.



Illus. 14 Native and Output Gateway printers on a central print server



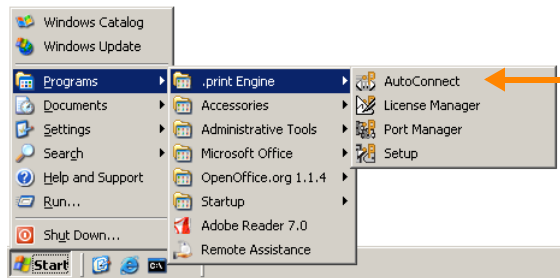
Illus. 15 Assign native printers to the Output Gateway printers (example for 32-bit Windows)

Terminal server

Configuring .print AutoConnect

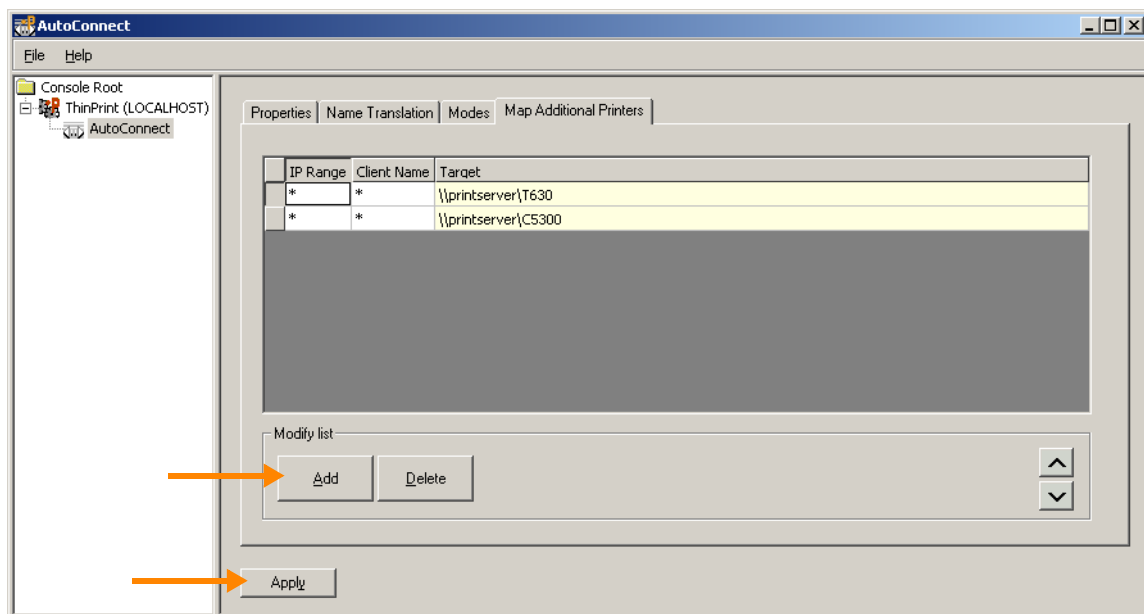
The following settings must be made so that AutoConnect can create the necessary printers in the terminal sessions:

1. Start AutoConnect configuration in the Microsoft Management Console (MMC).
You can use the program group .PRINT ENGINE in START menu (Illus. 16).



Illus. 16 Starting configuration of AutoConnect with MMC

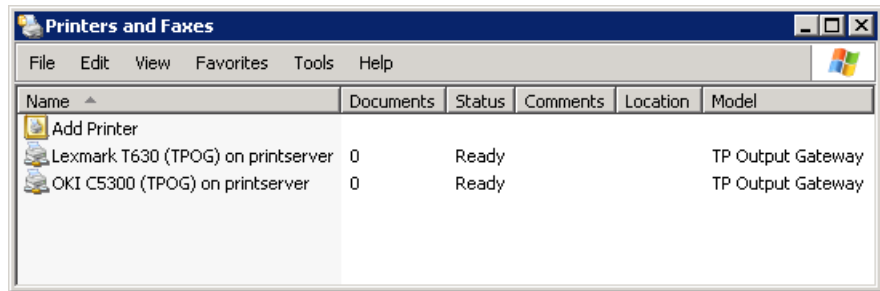
2. Enter all shares under MAP ADDITIONAL PRINTERS on the central print server (Illus. 14). Use the ADD button each time. When finished, confirm by clicking APPLY (Illus. 17).



Illus. 17 MMC: adding print server shares for connection

Test print

Now test your .print Client Gateway installation. Print from within a session on the terminal server to each of the printers created by .print AutoConnect, **Lexmark T630** and **OKI C5300** (Illus. 18).



Illus. 18 Printers created in the terminal session

How does print data find its way to the correct printer?

All print jobs are first sent “Driver Free” from the terminal server to the print server – without bandwidth control or compression. The print server renders the print data using the native printer driver and sends it in print format (RAW), compressed, and across controlled bandwidth to the Intermate10x – the .print Client Gateway (IP address: 192.168.130.219).

After decompressing it the Intermate10x forwards print data to the printer. Which printer receives what print job is decided by the printer ID:

Printer	Printer ID in the Intermate10x	Printer (object) name on the print server
Lexmark T630	13	Lexmark T630#192.168.130.219:13
OKI C5300	1	OKI C5300#192.168.130.219:1

- Print data with the ID 13 is sent to the Lexmark T630.
- Print data with the ID 1 is sent to the OKI C5300.
- Print jobs with no or incorrect ID will be sent to the CURRENT PRINTER – here, Network Destination 3 (Illus. 9); i.e., to the Lexmark T630 (Illus. 10).

Done!

Next step? Try renaming the printers (printer objects) on the central print server by replacing the IP address with the Intermate10x’s host name (DEVICE NAME in Illus. 8; [Page 11](#)). First, though, you must delete the assignments for Printer Virtualization Layer (Illus. 15) and then specify new ones ([Page 14](#)). Use the following command prompt command to delete assignments:

```
Rundll32 TPPrnUI.dll, TPSetOption_RUNDLL
"source_printer" DFNP ""
```

Example:

```
Rundll32 TPPrnUI.dll, TPSetOption_RUNDLL
"Lexmark T630 (TPOG)" DFNP ""
```

Please also note that the print spooler must then be restarted.

Appendix

Additional sources

- At www.intermate.com/intermate100plus/ or www.intermate.com/intermate101/ you will find all documentation on the **Intermate100 Plus** or **Intermate101**.
- At www.thinprint.com/ → FIND PRODUCT → .PRINT SERVER ENGINE → MANUAL(S) you will find the user manuals for the server and client components of **ThinPrint .print**.
- At www.thinprint.com/ → FIND PRODUCT → .PRINT SERVER ENGINE → WHITE PAPERS or www.thinprint.com/ → SUPPORT & SERVICES → WHITE PAPER DOWNLOAD you will find additional documentation on ThinPrint.

Abbreviations

BIOS	Basic Input/Output System
DFNP	Driver Free Native Printing (= Printer Virtualization Layer)
EMF	Enhanced Meta File (a printer driver independent Windows print data type)
IBM	International Business Machines Co.
ICA	Independent Computing Architecture (Citrix)
ID	Identification (number)
IMCU	Intermate Management & Configuration Utility
IP	see TCP/IP
LAN	Local Area Network
LPD	Line Printer Daemon
LPR	Line Printer Remote
LPT	Windows Line Printer Port
MMC	Microsoft Management Console
OKI	Oki Electric Industry Co.
PDA	Personal Digital Assistant
PC	Personal Computer
PCL	Printer Command Language
RAW	Standard print data type (print jobs are rendered with a native printer driver)
RDP	Remote Desktop Protocol (Microsoft)
RFC	Request for Comments (series of documents, begun in 1969, which describe the Internet Protocol Suite and relevant experiments)
TCP/IP	Transport Control Protocol/Internet Protocol

- TP** ThinPrint
- V-Layer** Printer Virtualization Layer
- WAN** Wide Area Network