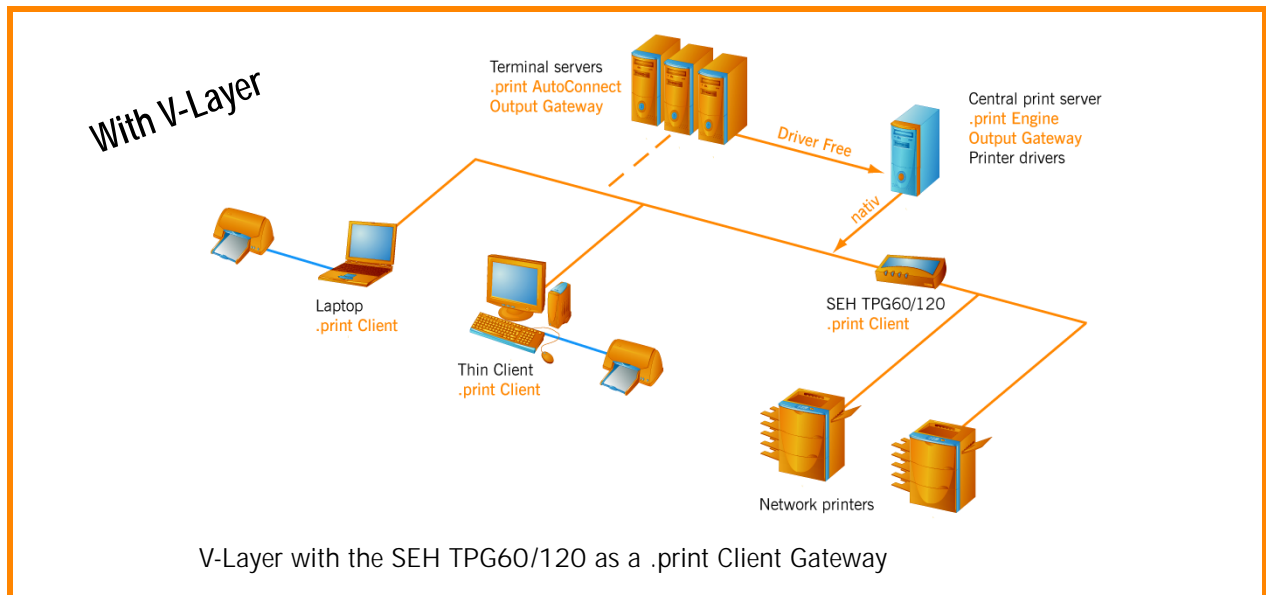


SEH TPG60/120 as a .print Client Gateway

Example for practice



A **.print Client Gateway** can greatly simplify the introduction of ThinPrint .print because it can receive print jobs for an entire group of client machines and printers, decompress and decrypt 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 as well as any SSL/TLS certificates must be installed on each end device.

The following example helps you install a .print Client Gateway using the **ThinPrint Gateway TPG60/120** from SEH as a test scenario. Once you get a feel for the functionality, you can install it according to your system’s individual requirements.

With **V-Layer**, it is unnecessary to install printer drivers on terminal servers or on 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 TPG60/120.

Introduction

Sample configuration

Installation

- Printer and Client Gateway TPG60/120
- Client machine(s)
- Central print server
- Terminal server

Configuration

- Network
- Client Gateway TPG60/120
- Central print server
- Terminal server
- Installing SSL/TLS certificates
- Test print

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Issued: October 2, 2009 (v32)

Introduction	4
Sample configuration	5
Installation	6
Safety warning	6
Printer and SEH TPG60/120	6
Client machine(s)	6
Central print server	6
Terminal server	6
Configuration	7
Network	7
Client Gateway SEH TPG60/120	7
Configuring IP address and network printers	7
Installing an SSL/TLS certificate	9
Central print server	17
Creating printers and configuring V-Layer	17
Adding and configuring ThinPrint ports for encryption	18
Installing SSL/TLS certificates	20
Terminal server	21
Configuring .print AutoConnect	21
Test print	22
How does print data find its way to the correct printer?	22
Additional configuration options	23
.print AutoConnect	23
.print Connected Gateway	24
Appendix	26
Customer service and technical support	26
Additional sources	26

Introduction

The .print Client Gateway can greatly simplify the introduction of ThinPrint .print because it can receive print jobs for an entire group of client machines and printers, decompress and decrypt 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: rich clients, printers, thin clients, etc. This could mean that with thin clients, for example, a 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 **ThinPrint Gateway TPG60/120 from SEH** as a test scenario. Once you get a feel for the functionality, you can install it according to your system's individual requirements.

An SEH TPG60/120 has an embedded .print Client. The TPG60 can address up to six network printers (via TCP/IP) – the TPG120 twelve. See also www.seh.de.

With **V-Layer**¹, printer drivers are not needed on either the terminal servers, the virtual desktops or the client machines, only on a central print server (see Illus. 1). To enable this, a ThinPrint Output Gateway is installed on both the terminal servers/virtual desktops and the print server. It appears to the operating system as a printer driver but sends the print jobs “un-print-ready” (as RAW data).

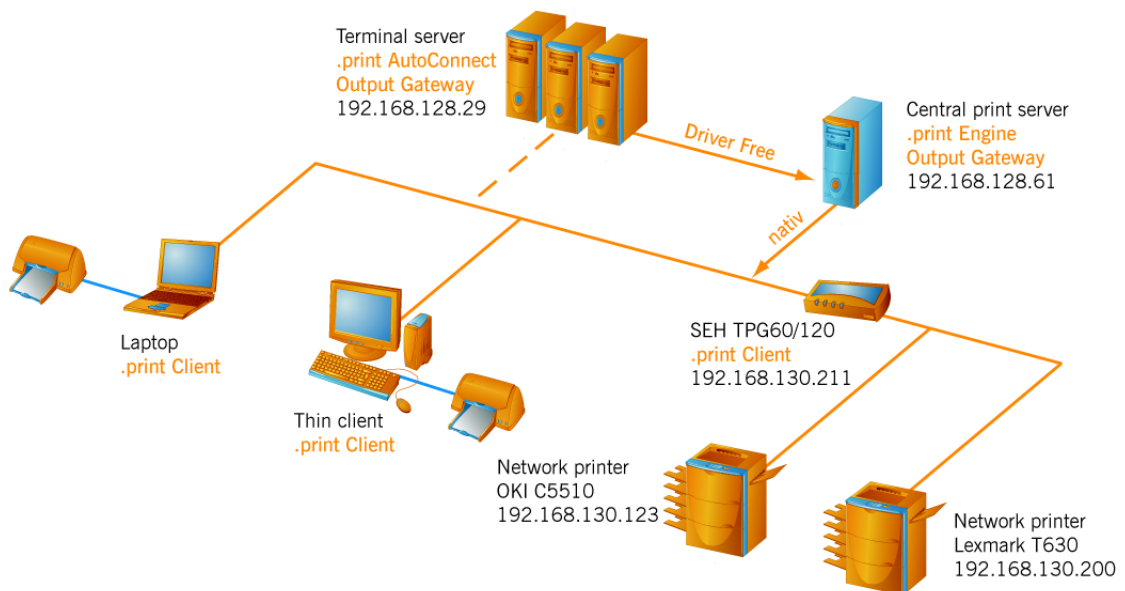
The Output Gateway printers on the central print server are shared so that printer connections can be established from the terminal servers (or virtual desktops) to these shares. In this way, print data from applications on the terminal servers are sent in EMF format to the print server. Once there, it is sent from the Output Gateway printer to another printer for which the necessary (native) printer driver has been installed. The print job is then completed (rendered) and the .print Engine compresses it, encrypts it (if specified), and sends it across controlled bandwidth to the TPG60/120. The .print Client in the TPG60/120 then decompresses and decrypts the print data and forwards it (conventionally) to the correct network printer.

1 Printer Virtualization Layer

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 ThinPrint Gateway TPG60 or TPG120
- 2 network printers with their own network card (without integrated .print Client)
- 1 terminal server² – .print AutoConnect and ThinPrint Output Gateway installed (.print version 7.6)
- 1 central print server – .print Engine installed (.print version 7.6)



Illus. 1 Example configuration

Tips

1. .print Client Gateway (TPG60/120) receives print jobs exclusively via the protocol TCP/IP (not via ICA or RDP).
2. The following .print (demo) licenses are necessary for this sample configuration:
 - .print Server Engine + 1 Access license (server-based licensing) or
 - .print Printserver Basic Pack + User licenses (user-based licensing)
 All licenses are installed on the central print server.
3. This example illustrates TPG60/120 configuration without and with SSL/TSL encryption. Other .print features are similarly described in the following manuals ([Page 26](#)):
 - .print Application Server Engine
 - .print Server Engine
 - .print Connected Gateway

² with or without Citrix XenServer/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.

Also read the user manual for TPG60/120 from SEH in particular ([Page 26](#)).

Printer and SEH TPG60/120

- Connect the SEH TPG60/120 and the network cards of both network printers to the network.

Client machine(s)

- Install a PC or thin client with RDP client (=RDC) or a Citrix ICA client in the network (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 26](#).

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 26](#).

Configuration

Network

– Assign all devices IP addresses within the same subnet; in this example (Illus. 1):

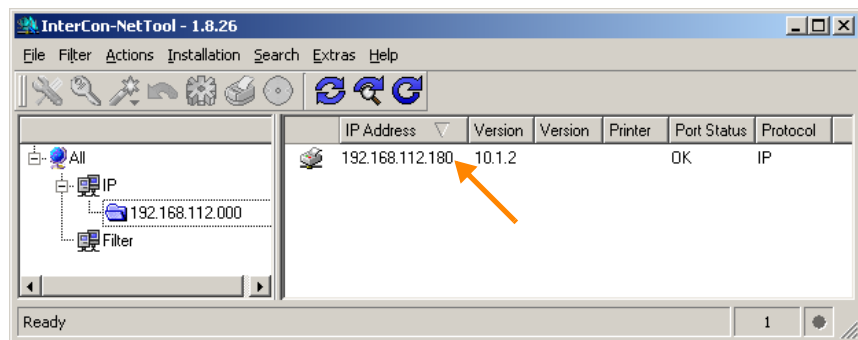
- for the *TPG60/120* 192.168.130.211
- for the *Lexmark* network printer 192.168.130.200
- for the *OKI* network printer 192.168.130.123
- for the terminal server 192.168.128.111
- for the central print server 192.168.128.47

Client Gateway SEH TPG60/120

Configuring IP address and network printers

IP address

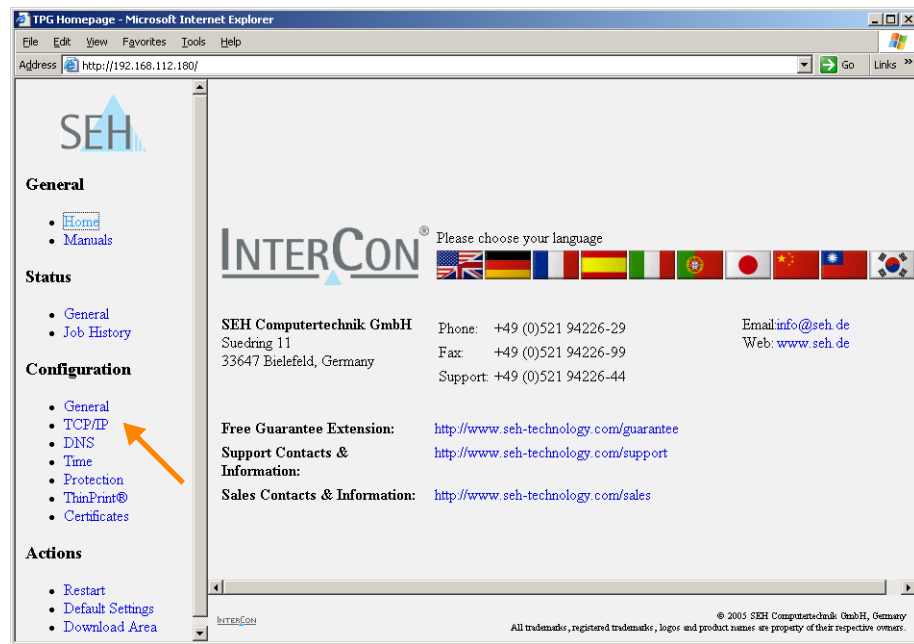
– If you do not know the IP address of the TPG60/120 or if it is not reachable, install and start the SEH management tool, **InterCon-NetTool**³ on the PC or terminal server. Find the IP address of the TPG60/120 here (Illus. 2).



Illus. 2 InterCon-NetTool by SEH: all SEH print servers are displayed

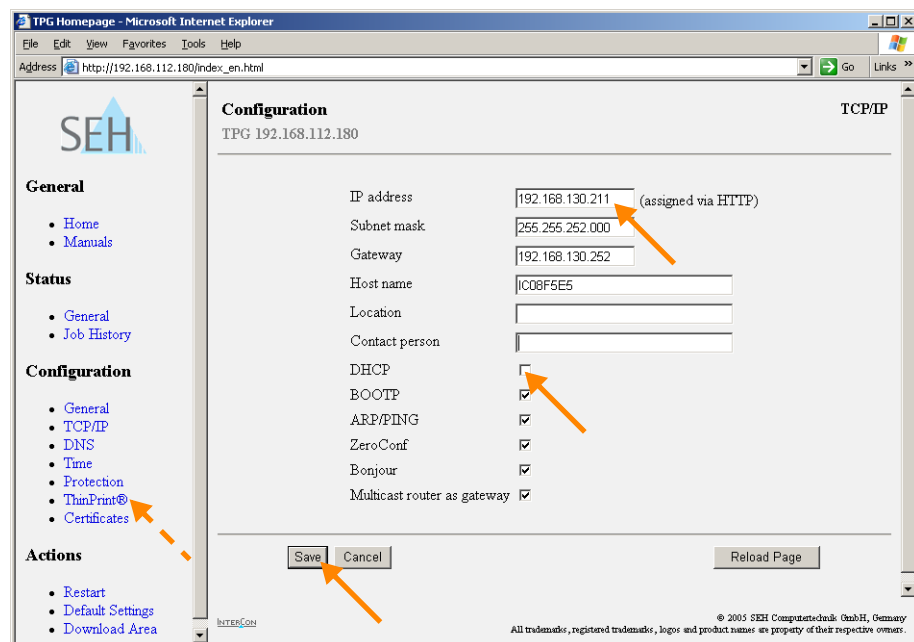
- Close the InterCon NetTool. Further configuration can be made with a web browser (Illus. 3).
- Open the TPG60/120 web interface and click TCP/IP (Illus. 3).

³ Included in delivery of the TPG60/120



Illus. 3 Configuring the TPG60 with web interface: select TCP/IP

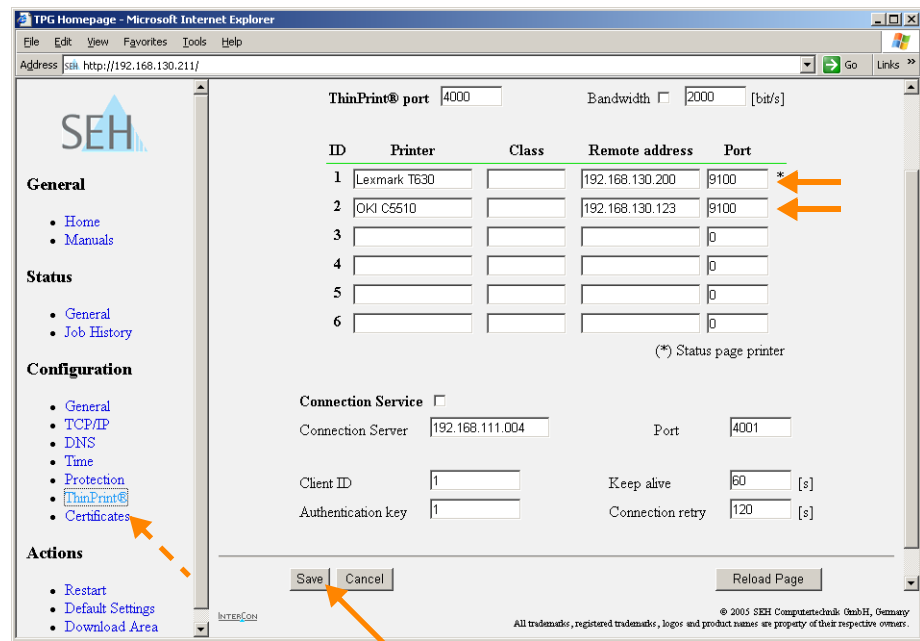
- Enter the desired IP address and disable DHCP (Illus. 4, right). Click SAVE. The TPG60/120 will automatically restart.



Illus. 4 Web interface InterCon-NetTool: changing the IP address of the TPG60

Network printer

- Select THINPRINT (Illus. 4, left).
- Set up your network printers as described on [Page 7](#) and confirm by clicking SAVE (Illus. 5, left). The TPG60/120 will automatically restart.

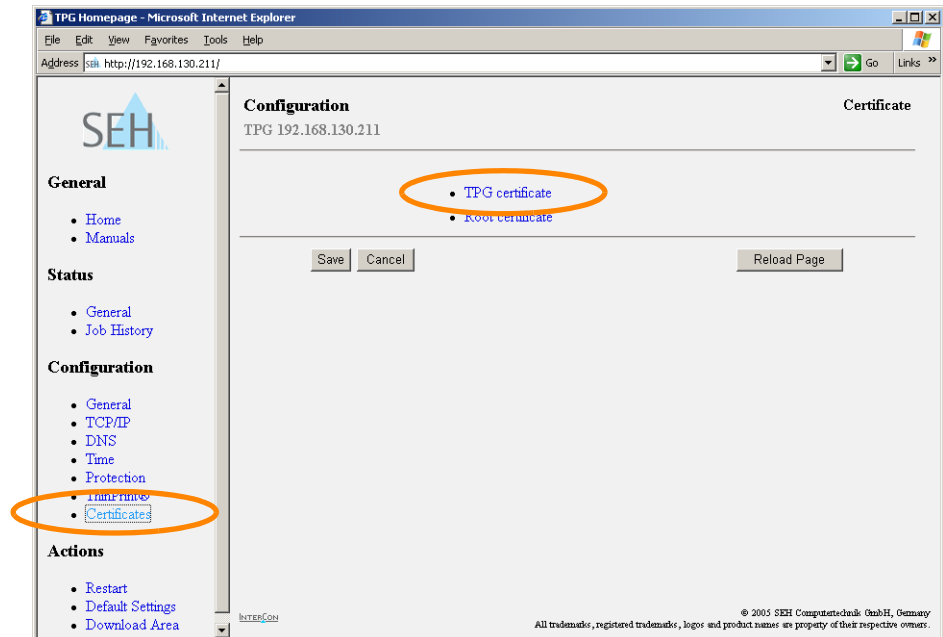


Illus. 5 Set up both network printers and click SAVE

Installing an SSL/TLS certificate

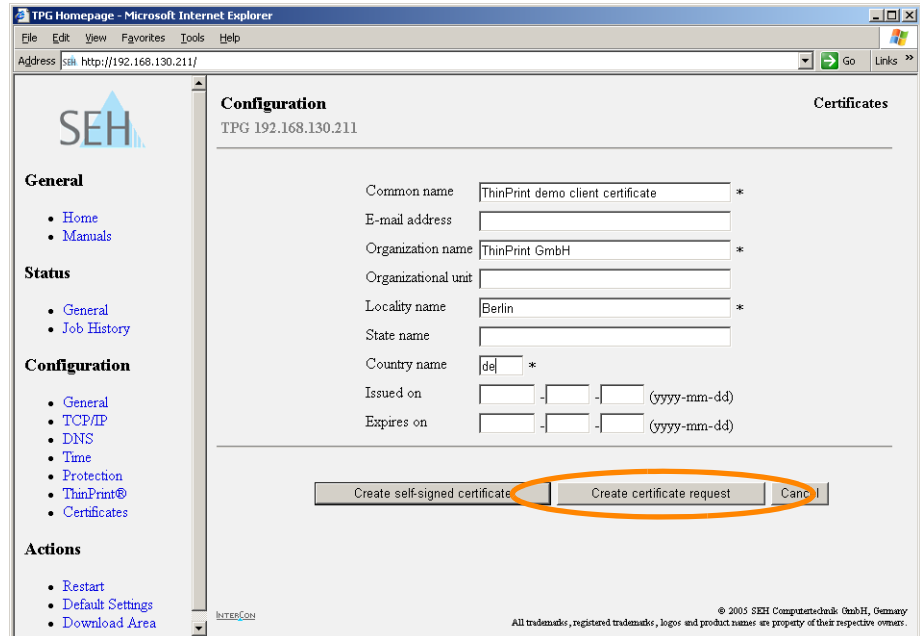
Requesting a certificate

- If you want to print with encryption, then select CERTIFICATES in the main window now (Illus. 5, left).
- Delete an existing certificate by clicking DELETE CERTIFICATE (BASE64) if applicable.
- Select TPG CERTIFICATE (Illus. 6).



Illus. 6 TPG60 web page: select TPG CERTIFICATE

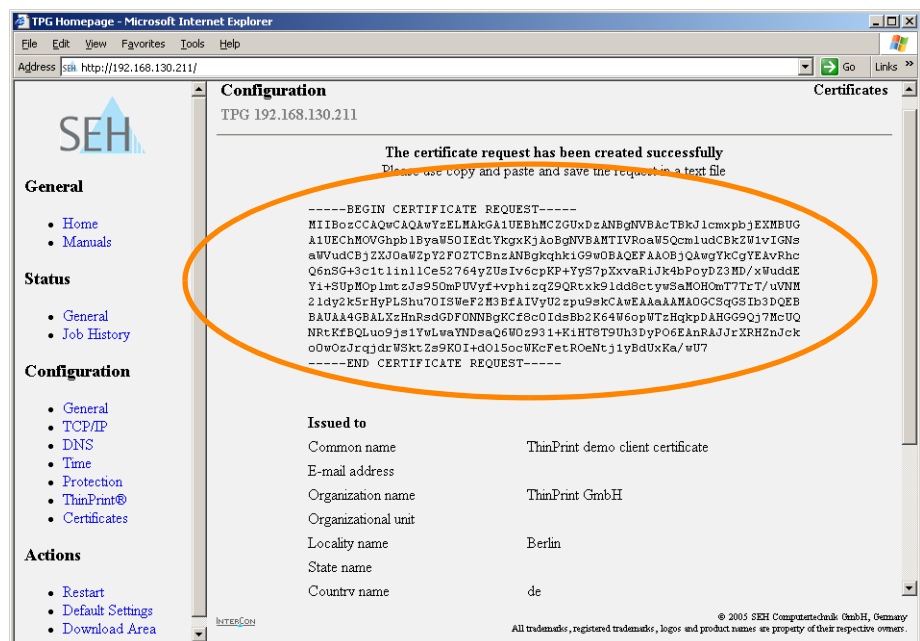
- Fill in at least the mandatory fields, which are marked with an asterisk (*). You can also specify here how long the client certificate is to be valid. Next, click CREATE CERTIFICATE REQUEST (Illus. 7).



Illus. 7 TPG60 web page: CREATE CERTIFICATE REQUEST

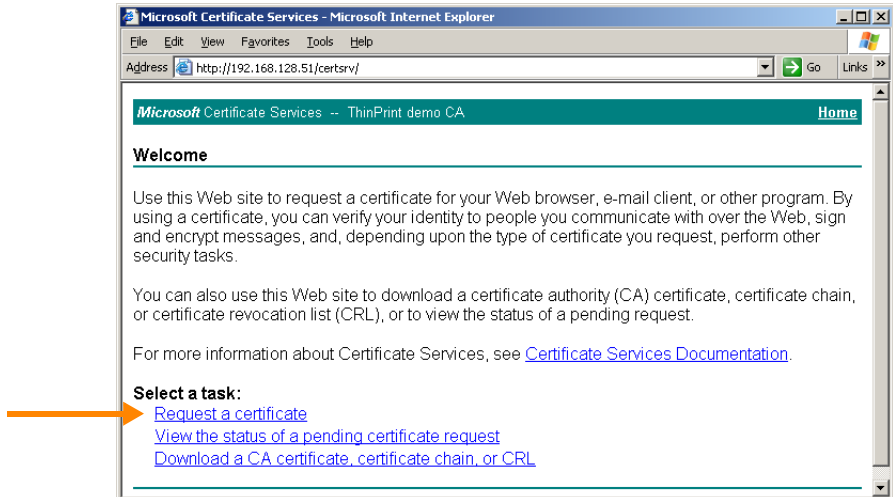
You will receive a message stating that the request is in progress. After a short time, the window in Illus. 8 appears with the successful certificate request. Here, you can see the private key of the client certificate, with which the certificate request will be made for the certificate server.

- Copy the key (circled) and paste it into a text file.



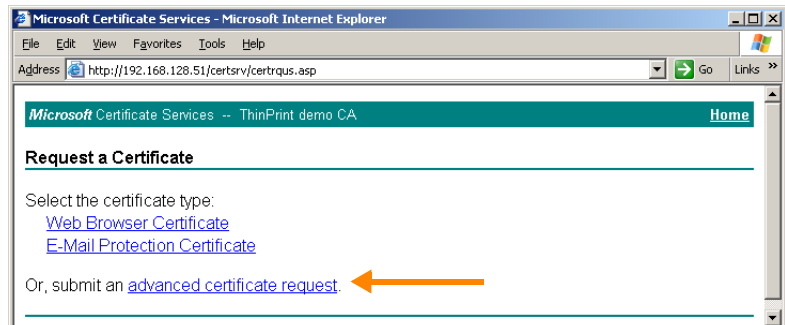
Illus. 8 TPG60 web page: successful certificate request

- Save the text file (e.g., an .rtf file) on any computer. From there, open the web page of the certificate server, for example, HTTP://192.168.128.51/CERTSRV. If you do not have a certificate server, then first read the "Creating SSL certificates for printing with .print" white paper ([Page 26](#)).



Illus. 9 Website Certificate Services: Request a certificate

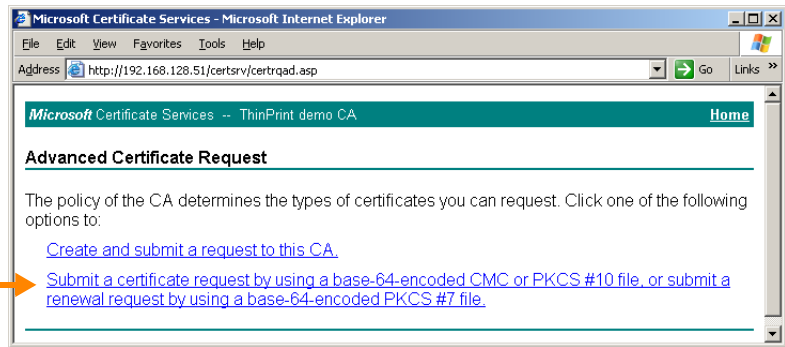
- Once the website is open, request the client certificate by selecting REQUEST A CERTIFICATE (Illus. 9)⁴.



Illus. 10 Certificates server website: submit an advanced certificate request

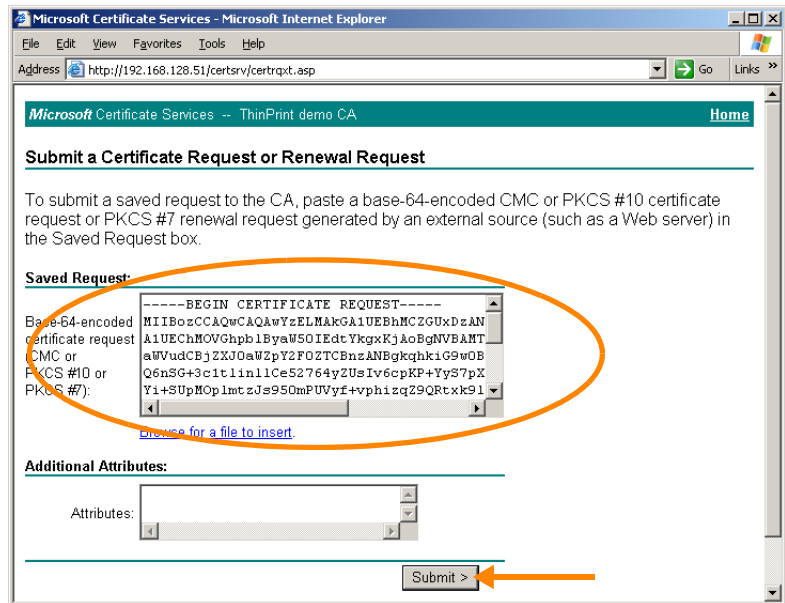
- A window opens like the one shown in Illus. 10. Click ADVANCED CERTIFICATE REQUEST.

⁴ If the specified link is inactive, change the security settings in your browser (enable scripting, save web page as a trusted site).



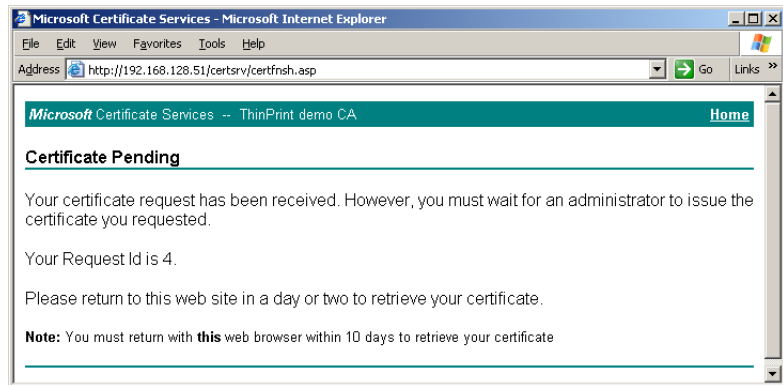
Illus. 11 Certificate server web page: submitting a Base64 certificate request

- For the TPG60/120 client certificate, you require a certificate that is coded with Base64. Therefore, select the lower link, as in Illus. 11. A window opens, in which you can enter your saved request (Illus. 12).



Illus. 12 Certificate server web page: entering a Base64 certificate request

- In the top text field (Illus. 12, circled area), either with copy&paste or by upload with the link below the text field, enter the contents of your text file (e.g., .rtf file). Then click SUBMIT. You will receive the message that the certificate has been requested (Illus. 13).

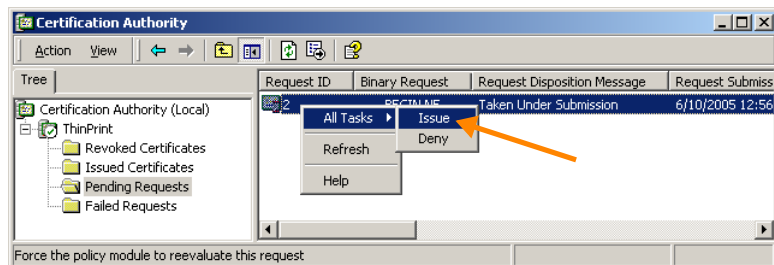


Illus. 13 Certification server website: certificate successfully requested

You will receive a message confirming that the certificate request was successful (Illus. 13). You do not have to wait two days; you only have to wait until the certification server administrator has issued the certificates (as described in the next paragraph).

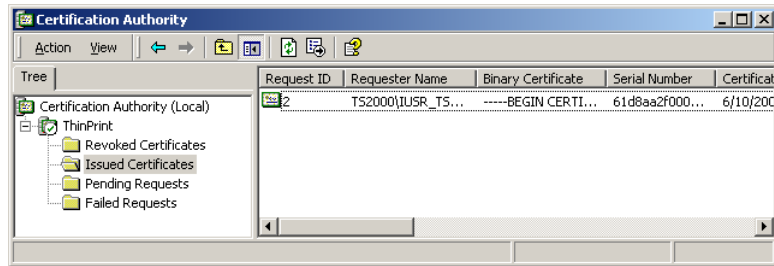
*Certification server:
issuing the client
certificate*

As administrator, you can see on the server which client machines have requested a certificate. You have the choice of issuing or denying the requested certificates. To do so, go to the CONTROL PANEL under ADMINISTRATIVE TOOLS to the CERTIFICATION AUTHORITY folder. Under PENDING REQUESTS, you will find the certificate requests (Illus. 14).



Illus. 14 Server certification authority: issuing requested certificates from the PENDING REQUESTS folder

- Choose the certificate and right click to select ALL TASKS→ ISSUE (Illus. 14). You have now created the client certificate and signed it with the server’s root certificate. The client certificate disappears from the PENDING REQUESTS folder and is now found under ISSUED CERTIFICATES (Illus. 15).

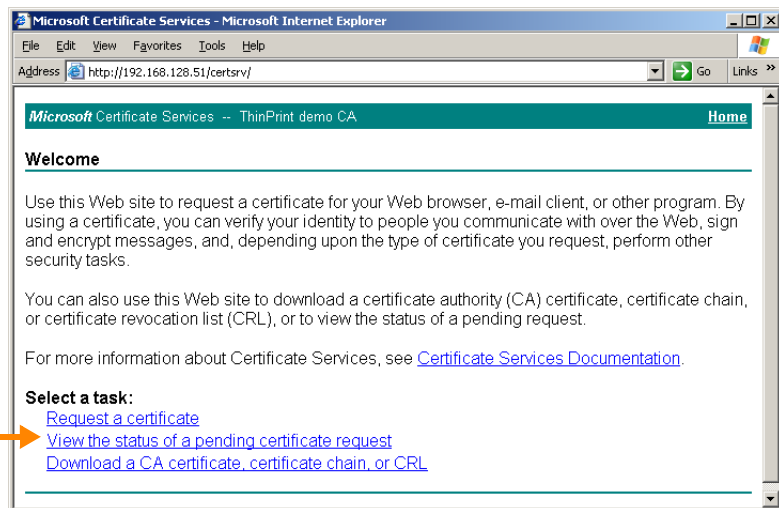


Illus. 15 Server certification authority: issued certificate in ISSUED CERTIFICATES folder

Importing and installing a client certificate for the TPG60/120

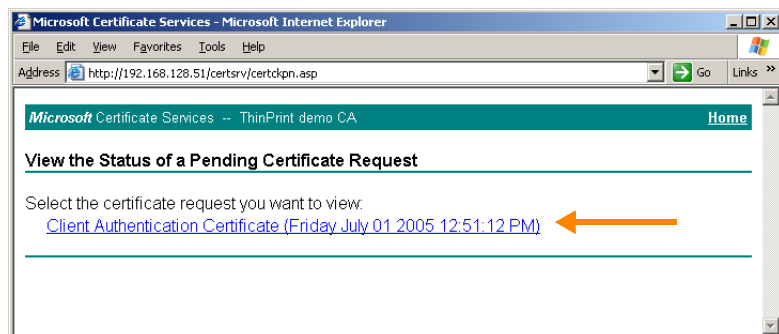
From the client machine, you can now get the certificate issued by the root certification authority from the certification server's website:

- Open the same browser with which you submitted the certificate request (Illus. 9) and enter the server website again (example: HTTP://192.168.128.51/CERTSRV).



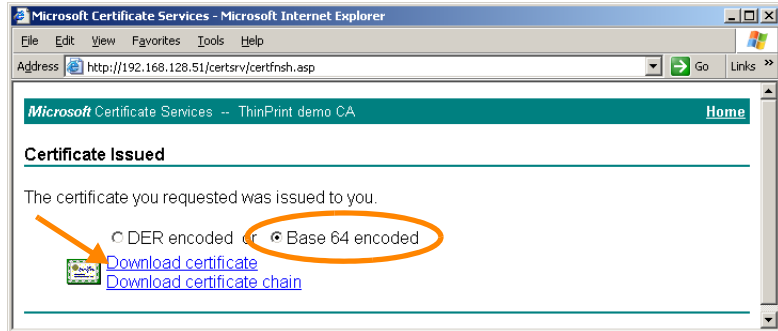
Illus. 16 Certification server website: selecting an issued certificate

- This time, select: VIEW THE STATUS OF A PENDING CERTIFICATE REQUEST on the website (Illus. 16).



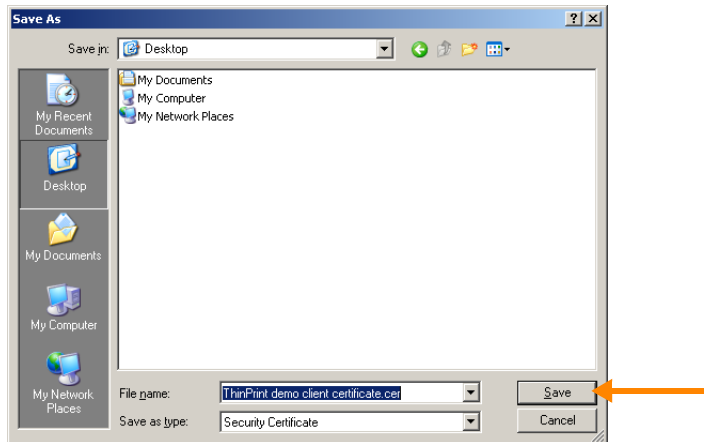
Illus. 17 Certification server website: selecting an issued certificate

- You will be given a list of certificates that have been issued by the server (Illus. 17). Select your certificate.



Illus. 18 Certification server website: install issued certificate

- You will receive a message confirming that the certificate was issued. Select the BASE 64 ENCODED option (Illus. 18) and then click DOWNLOAD CERTIFICATE.
- You may receive a security warning asking if you really want to download the file. Check the information and click SAVE to download the client certificate. Select a place where the certificate is to be saved in .cer format; e.g., on the desktop (Illus. 19).



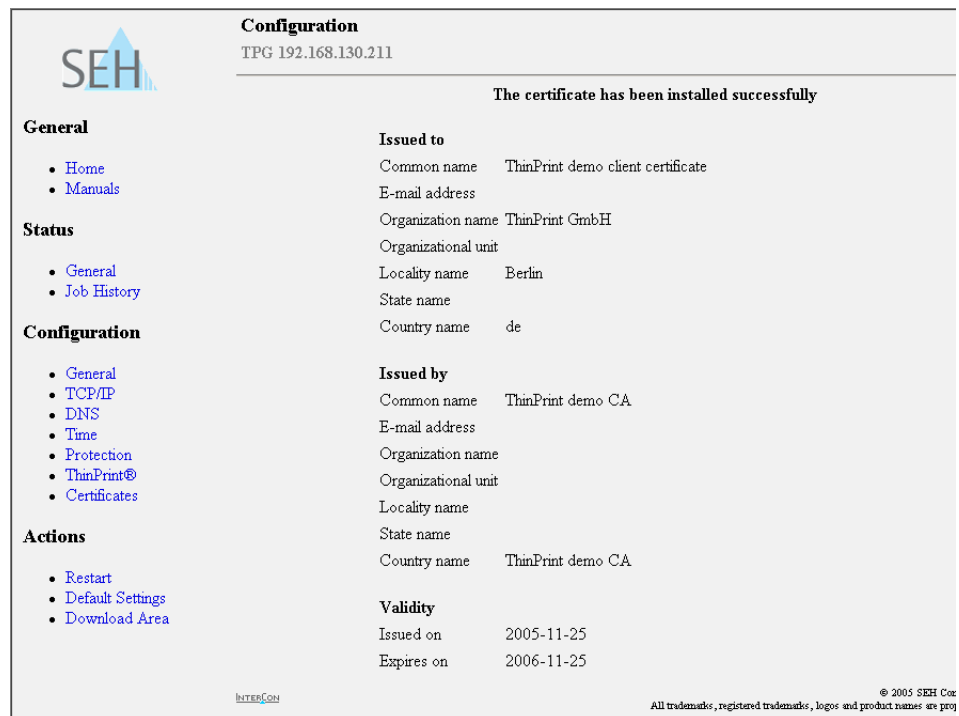
Illus. 19 Downloading the certificate (.cer file): save file locally

- Open the TPG60/120 web page again and select the .cer certificate that you just saved (Illus. 19) at CERTIFICATE FILE (top arrow in Illus. 20).



Illus. 20 TPG60 web page: importing the certificate

- Once you have entered the path to the certificate (Illus. 20), click LOAD CERTIFICATE. You will receive a message confirming that the client certificate has been successfully installed (Illus. 21).



Illus. 21 TPG60 web page: certificate successfully installed

- To end the configuration, simply close your web browser.

Central print server

Creating printers and configuring V-Layer

- Create the relevant printers (printer objects) on the print server for both of the network printers connected to the TPG60/120⁵. When doing so, install the printer drivers, too. **Connect both printers with a ThinPrint port.** In Port Manager (Illus. 26), select TCP/IP as port type (the protocol) and specify the name convention for the printer name syntax.
- Next, rename the printers in the following format:

`printer_name#ip_address:printer_id`

Or:

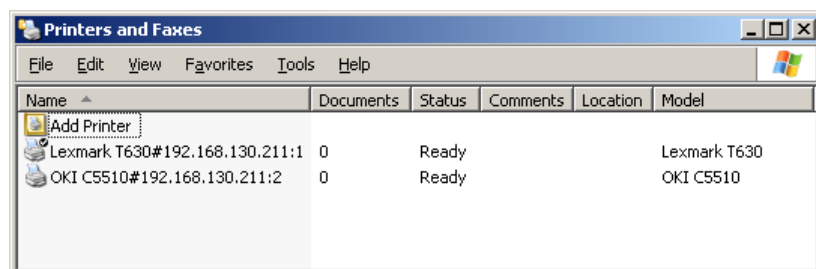
`ip_address:printer_id#printer_name`

The following name convention is used below:

`printer_name#ip_address:printer_id`

The IP address is the .print Client Gateway's (TPG60/120), and the printer ID can be seen in Illus. 5. In our example, this creates the two printers connected to the TPG60/120 (Illus. 22):

`Lexmark T630#192.168.130.211:1`
`OKI C5510#192.168.130.211:2`



Illus. 22 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.)

- 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. 23). See also the .print Server Engine manual.
- 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`

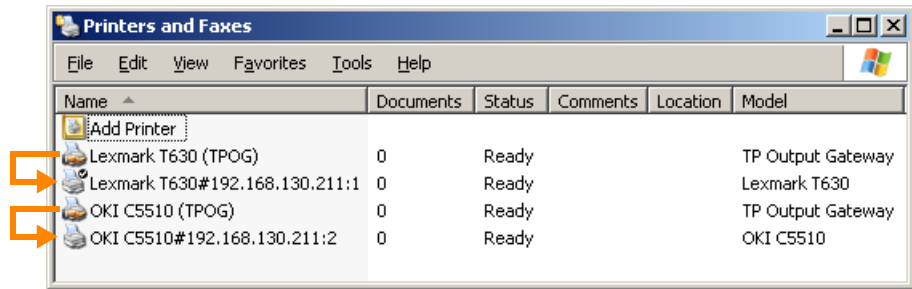
⁵ You can automate this process with .print AutoConnect ([Page 23](#))

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

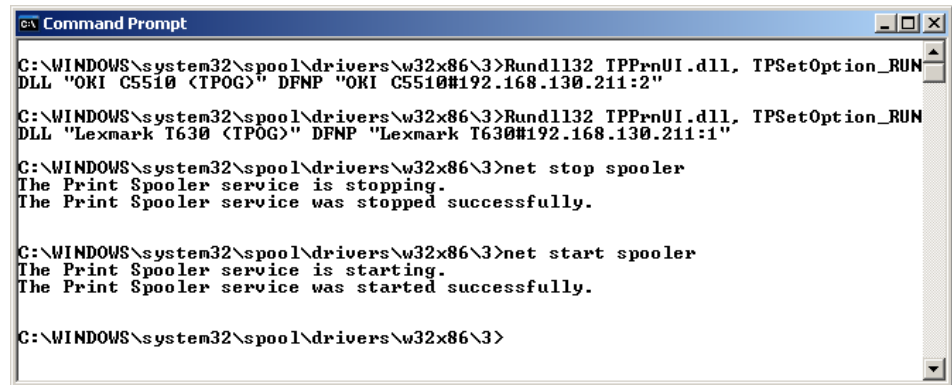
```
Rundll32 TPPrnUI.dll, TPSetOption_RUNDLL
"source_printer" DFNP "target_printer"
```

Here, the Output Gateway printer is entered as each *source_printer* and one with native printer driver as *target_printer*. Example (Illus. 23 and 24):

```
Rundll32 TPPrnUI.dll, TPSetOption_RUNDLL "Lexmark T630 (TPOG) " DFNP "Lexmark T630#192.168.130.211:1"
```



Illus. 23 Native and Output Gateway printers on a central print server

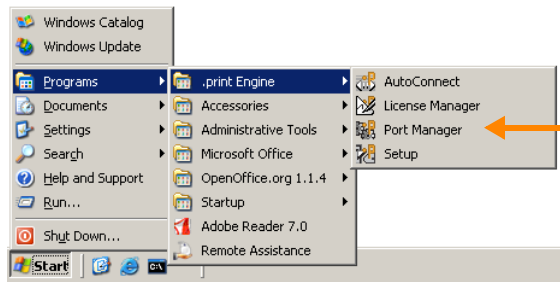


Illus. 24 Assign native printers to the Output Gateway printers (example for 32-bit Windows)

Tip! If you want to print without V-Layer, you can leave out installing the Output Gateway printers on the central print server (Lexmark T630 (TPOG) and OKI C5510 (TPOG)) and simply share the native printers on the print server (Lexmark T630#192.168.130.211:1 and OKI C5510#192.168.130.211:2).

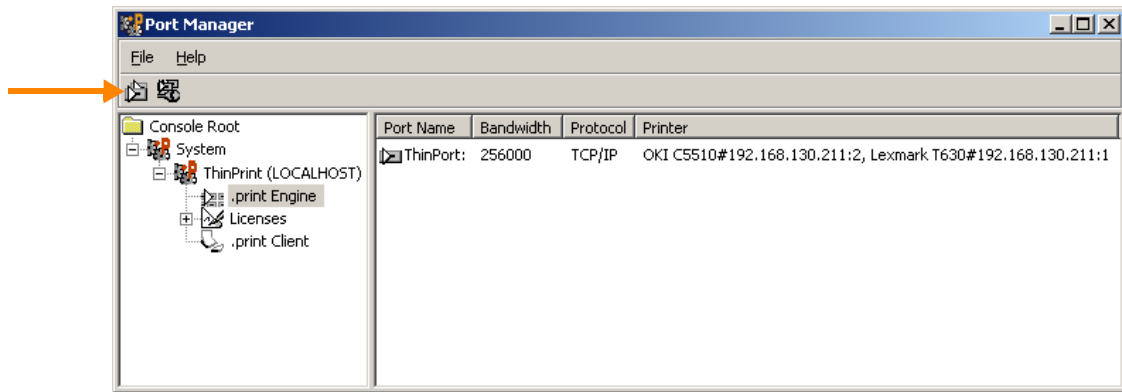
Adding and configuring ThinPrint ports for encryption

1. Start ThinPrint Port Manager using the program group .PRINT ENGINE in START menu (Illus. 25).



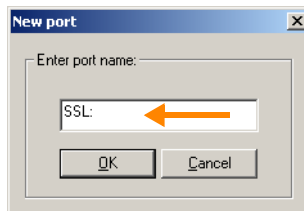
Illus. 25 Starting configuration of ThinPrint Ports

2. To print both with and without encryption, add a new ThinPrint port by clicking the relevant icon (Illus. 26).



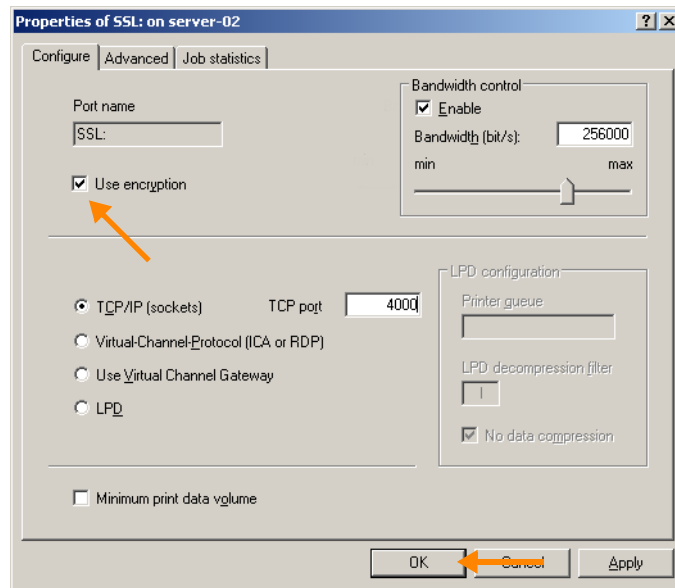
Illus. 26 Port configuration: Adding ThinPrint Port for encryption

3. Enter a suitable port name (Illus. 27).

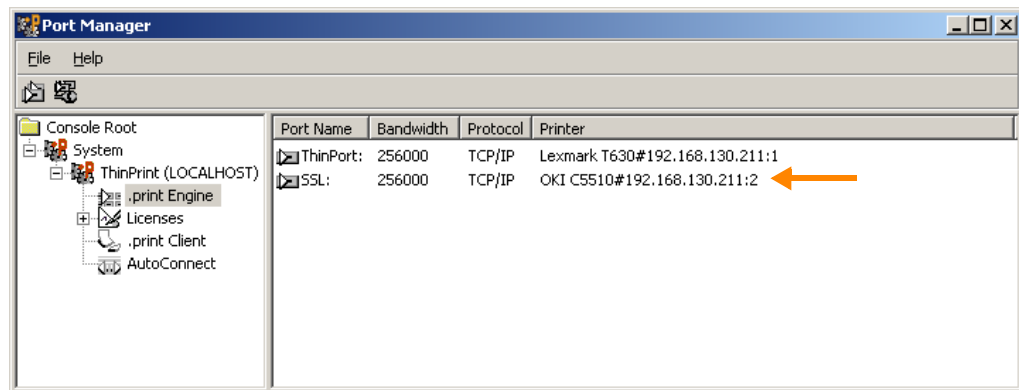


Illus. 27 Adding a new ThinPrint port

4. Double click the new entry in the Port Manager. The menu in Illus. 28 appears.
5. Select USE ENCRYPTION and confirm with OK.
6. Open the Printers and Faxes folder and in the properties of the OKI printer, select the new "SSL:" ThinPrint port as port.
7. Return to the Port Manager and refresh the view with the F5 key (Illus. 29). The OKI printer is now connected to the ThinPrint port that sends SSL/TSL-encrypted print data.



Illus. 28 Enabling SSL encryption



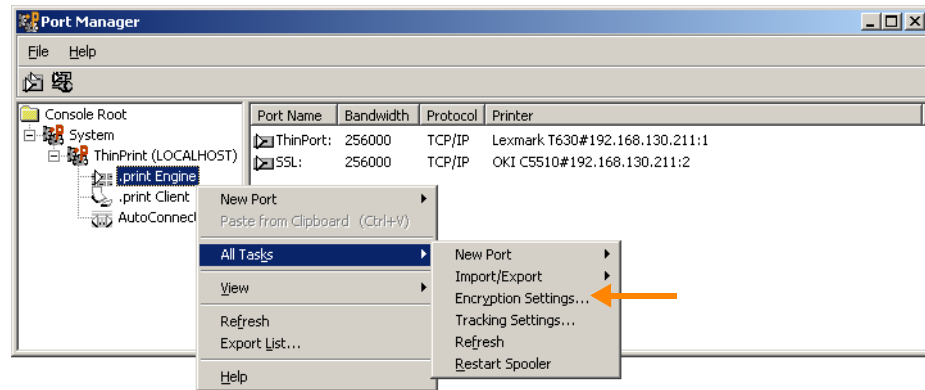
Illus. 29 New ThinPrint port with “reconnected” printer

Installing SSL/TLS certificates

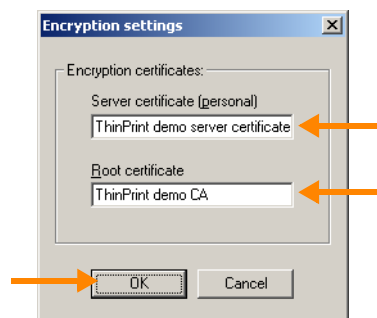
1. Import two SSL certificates to the Windows certificate store:
 - A server certificate
 - A root certificate

Proceed as described in the chapter on “SSL encryption” in the “.print Server Engine” manual (Page 26). The certificates must come from the same certificate server as that imported in the TPG60/120 (Page 9).

2. To determine which of the installed certificates is used by .print Engine, open the Port Manager again (Page 18) and select ALL TASKS→ ENCRYPTION SETTINGS from the .print Engine context menu (Illus. 30).
3. Enter the names of the server and root certificates (Illus. 31) and confirm with OK.



Illus. 30 Port Manager: select encryption settings



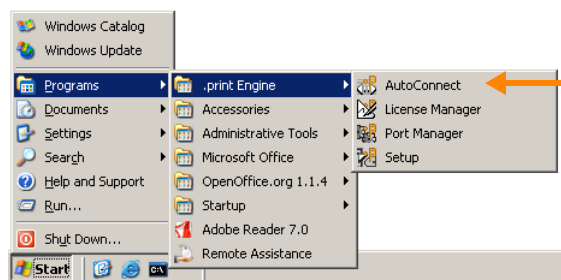
Illus. 31 Port Manager: enter the names of the certificates

Terminal server

Configuring .print AutoConnect

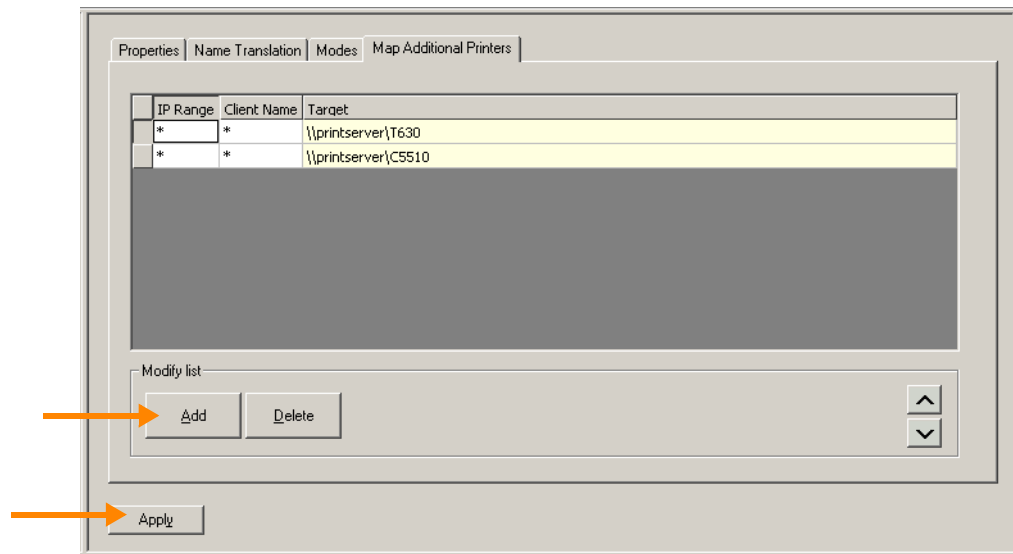
The following settings must be made so that AutoConnect can create the necessary printers in the terminal sessions:

1. Start AutoConnect configuration. You can use the program group .PRINT ENGINE in START menu (Illus. 32).



Illus. 32 Starting configuration of AutoConnect

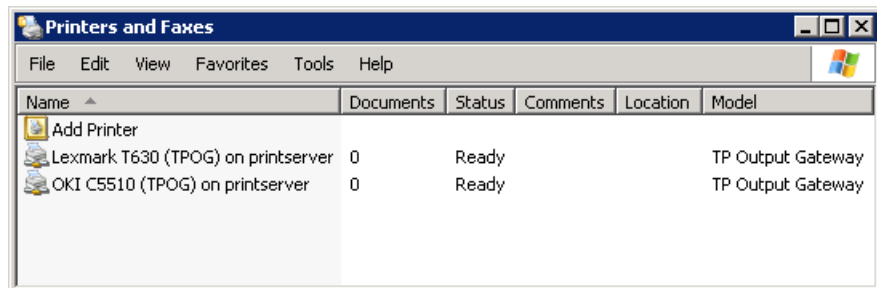
2. Enter all shares under MAP ADDITIONAL PRINTERS on the central print server (Illus. 23). Use the ADD button each time. When finished, confirm by clicking APPLY (Illus. 33).



Illus. 33 AutoConnect configuration: 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 C5510** (Illus. 34). Note that print data is sent to the **Lexmark T630 without encryption** but to the **OKI C5510 with encryption**.



Illus. 34 Printers created in the terminal session by AutoConnect

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, compression, or encryption. The print server renders the print data using the native printer driver and sends it in print format (RAW), compressed, encrypted if specified, and across controlled bandwidth to the TPG60/120 – the .print Client Gateway (IP address: 192.168.130.211).

After decompressing and decrypting it if necessary, the TPG60/120 forwards print data to the printer. Which printer receives what print job is decided by the printer ID (see Illus. 5 and 22):

Printer	Printer ID in the TPG60/120	Name of the native printer on the server
Lexmark T630	1	Lexmark T630#192.168.130.211:1
OKI C5510	2	OKI C5510#192.168.130.211:2

- Print data with the ID 1 is for Lexmark T630 and is sent from the central print server to the TPG60/120 without encryption because its server-side printer (Lexmark T630#192.168.130.211:1) is connected to the "ThinPort" (Illus. 29).
- Print data with the ID 2 is for OKI C5510 and is sent from the central print server to the TPG60/120 with encryption because the server-side printer (OKI C5510#192.168.130.211:2) is connected to the "SSL" port (Illus. 29).

Done!

Next step? Try renaming the printers on the central print server by replacing the IP address with the TPG60/120's host name (see also Illus. 3, Page 8). First, though, you must delete the assignments for V-Layer (Illus. 24) and specify new ones after renaming ([Page 17](#)). 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 ""
```

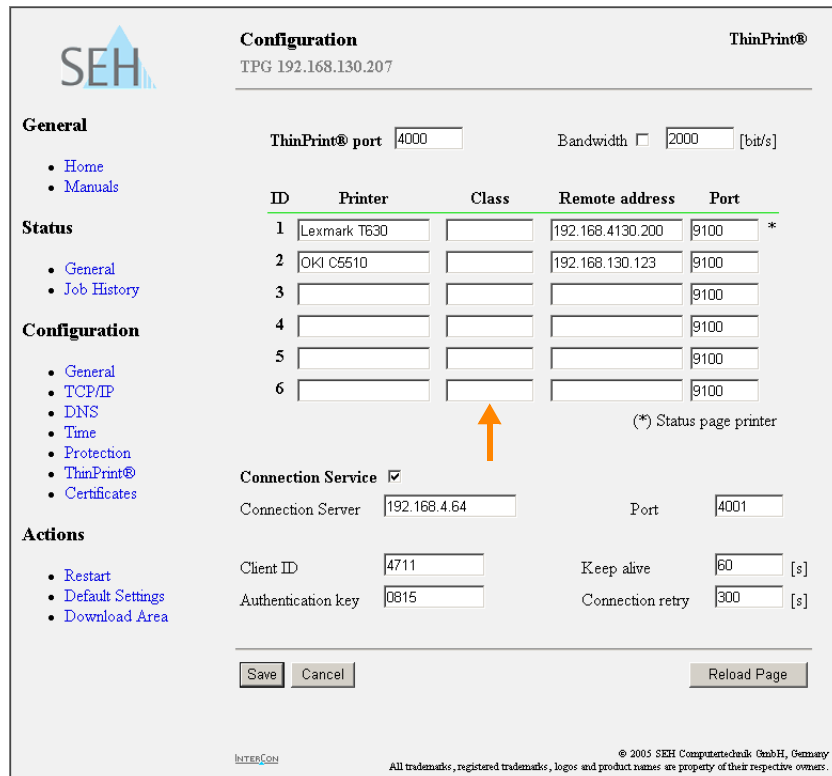
Additional configuration options

.print AutoConnect

The section on "Creating printers and configuring V-Layer" ([Page 17](#)) describes how you can manually create printers that print from a print server to the TPG60/120 with ThinPrint .print. The process of creating printers on a print server can be automated with .print AutoConnect. The following requirements must be met to do so:

- Installation of .print AutoConnect on the central print server and setup of the name translation table
- Creation of printer templates on the central print server – at least one for each printer driver

In addition, you can further simplify the AutoConnect setup by specifying a class name per printer in the ThinPrint configuration for the TPG60/120 (Illus. 35).



Illus. 35 Assign class names

More information about AutoConnect can be found in the white paper, “.print AutoConnect and .print Virtual Channel Gateway” as well as in the “.print Application Server Engine” manuals ([Page 26](#)).

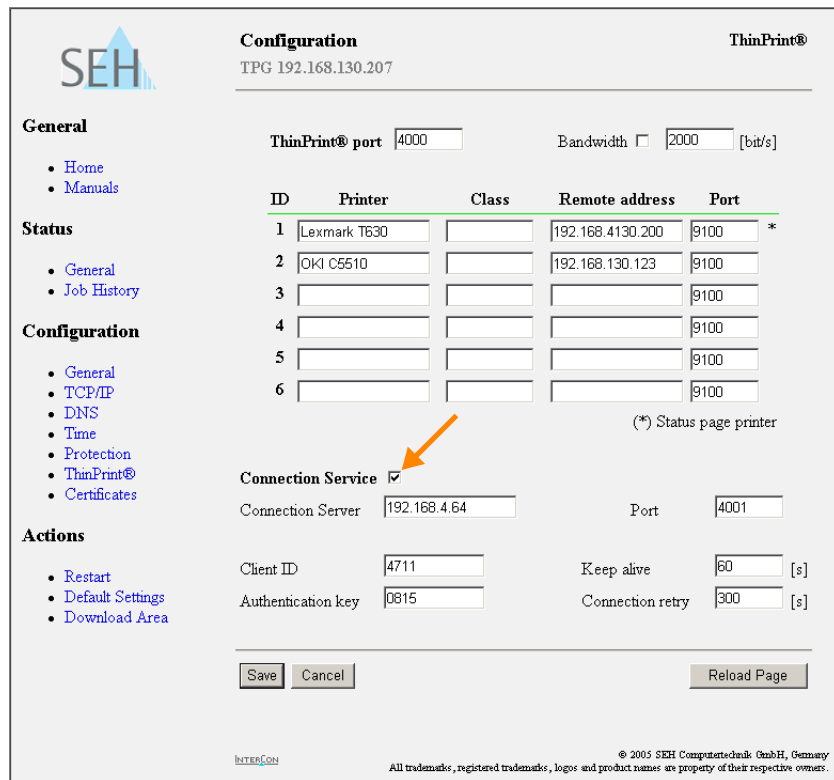
.print Connected Gateway

Unlike the usual direction of communication, the Connected Gateway also allows connections from a remote location to the central server and therefore enables the TPG60/120 to be addressed via TCP/IP, even in masked networks⁶. The .print Connected Gateway also stabilizes the transmission of print data, even during connection breaks of up to 90 seconds⁷. It is a separate product; on the server, it includes the .print Connection Service. On the client side, a .print Client version 6.2 or later is assumed, such as is integrated in the TPG60/120.

In the ThinPrint configuration of the TPG60/120, you must select CONNECTION SERVICE from the menu (Illus. 36).

⁶ = Networks with Network Address Translation (NAT), which is mainly supported by routers

⁷ To bridge longer connection breaks, it is recommended to use the additional product, .print Queue Manager.



Illus. 36 Configuring Connection Service

Illus. 36 shows the client-side configuration of the Connection Service. The service must be enabled here (arrow). Furthermore, the following input is required:

Connection Server	IP address of the server on which the .print Connection Service is running
Port	TCP port for communication with the .print Connection Service (default: 4001)
Client ID	Client ID for distinguishing between the .print Clients that are using the Connection Service – must be assigned on the server unambiguously for each client (here: TPG60/120)
Keep alive	Interval connection retries (default: 60 s; should not be changed!)
Authentication key	Value used for authentication –similar to a password; if not previously specified on the server, it is irrelevant at the first logon but cannot be changed thereafter
Connection retry	Wait time for connection retries if the .print Connection Service cannot be reached (default: 300 s)

More information can be found in the .print Connected Gateway manual (see below).

Appendix

Customer service and technical support

Customer Service www.thinprint.com/support
support@thinprint.com

ThinPrint website www.thinprint.com/ → SUPPORT & SERVICES

Additional sources

Further information about ThinPrint .print can be downloaded from our website.

Manuals The following SEH manuals are available at www.seh.de/ → SUPPORT → MANU-ALS → THINPRINT GATEWAY TPG60/120 → TPG60 or TPG120 → CHOOSE:

- TPG60 User Manual
- TPG60 Quick Installation
- TPG120 User Manual
- TPG120 Quick Installation

The following manuals (amongst others) are available at www.thinprint.com/ → PRODUCTS → OVERVIEW → <product name>:

- .print Application Server Engine
- .print Server Engine
- .print Engine for VMware View
- .print Connected Gateway
- .print Client user manuals

White papers The following white papers (amongst others) are available at www.thinprint.com/ → SUPPORT → WHITE PAPER DOWNLOAD:

- Creating SSL certificates for printing with .print
- .print AutoConnect and .print Virtual Channel Gateway
- ThinPrint licensing
- Windows machine as a .print Client Gateway
- SEH ISD200/300 as a .print Client Gateway