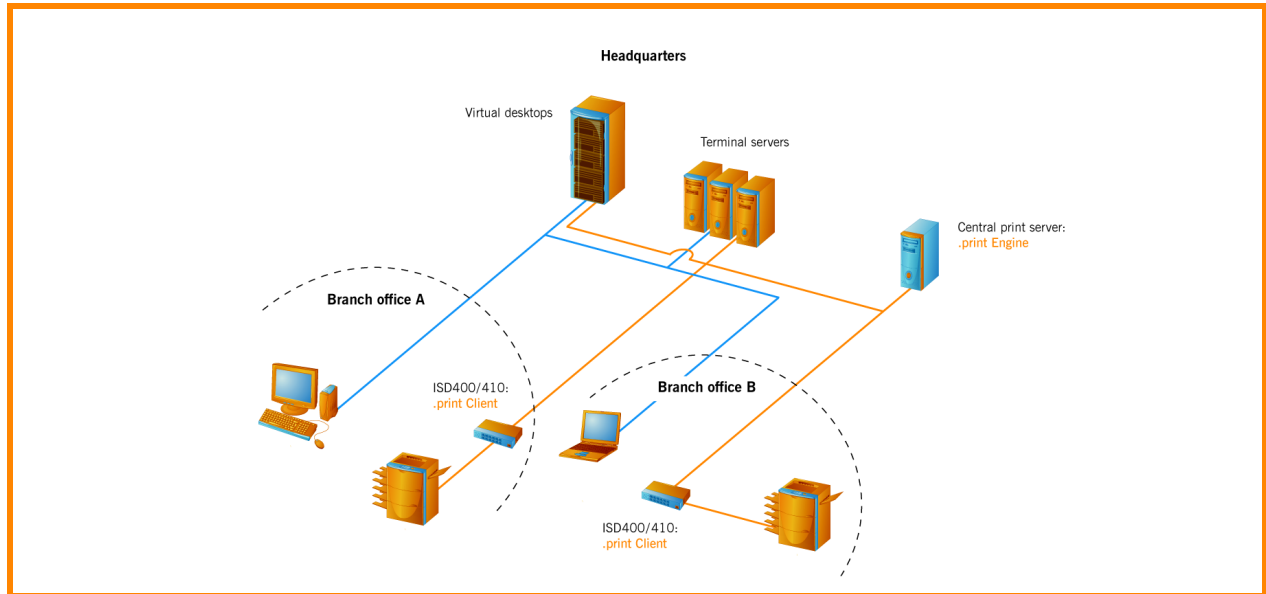


SEH ISD400/410 as a .print Client Gateway

(incl. ISD300 hardware version 3 & higher)



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 and decrypt them, and then distribute them conventionally in a local network. Then the *.print Client* is only necessary on the Client Gateway 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 SEH's **Intelligent Spooling Device ISD400/410** as a test scenario. Once you get a feel for the functionality, you can install it according to your system's individual requirements.

An ISD400/410 has an embedded *.print Client*. It can address network printers via Standard TCP/IP or LPR (RAW sockets printing).

Why *.print* and Client Gateway?

Example Configuration

Installation

- Printer and ISD400/410
- Clients
- Terminal server

Configuration

- Network
- ISD400/410
- Terminal server
- Installing SSL/TLS certificates
- *.print AutoConnect*
- *.print Connected Gateway*
- Test print

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.

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Foreword

The following example helps you install a **.print Client Gateway** using SEH's Intelligent Spooling Device **ISD400/410** as a test scenario. Once you get a feel for the functionality, you can install it according to your system's individual requirements.

An ISD400/410 has an embedded .print Client. It has been designed for large networks. See also <http://www.seh-technology.com>.

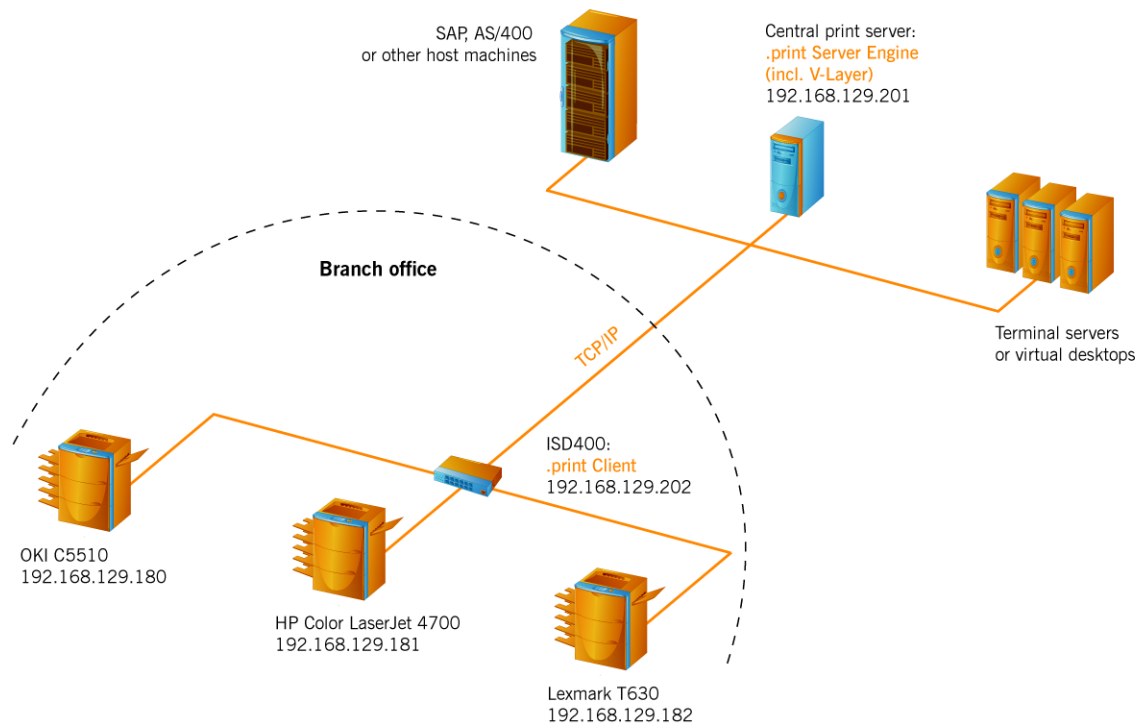
Why ThinPrint .print and Client Gateway?

	General ThinPrint .print	.print Client Gateway with ISD400/410
Use	<ul style="list-style-type: none"> • Bandwidth control and compression of print data • Print data encryption • Driver Free Printing • Print data tracking 	Not necessary to install .print Client on every client machine; it's embedded in the ISD400/410.
Function	.print Server component provides bandwidth control, print data compression, streaming, and encryption, then sends print data to the .print Client component.	Receipt, decompression, and decryption of print data as well as transmission to network printers
.print components to be installed	<ul style="list-style-type: none"> • .print Engine • V-Layer • .print Client • .print Management Center (recommended) • .print Connection Service if necessary • .print Virtual Channel Gateway if necessary 	<ul style="list-style-type: none"> • .print Engine onto a central print server, onto terminal servers or onto virtual desktops • [.print Client (TCP/IP) is embedded in the ISD400/410; AutoConnect, Connection Service and encryption support included]
.print licenses	<ul style="list-style-type: none"> • .print Server Engine or .print Engine for VMware View on a central print server • Without central print servers: .print Application Server Engine on terminal servers or .print Desktop Engine on virtual Desktops • .print Connected Gateway if necessary • .print Management Center if necessary 	<ul style="list-style-type: none"> • .print Server Engine or .print Engine for VMware View on a central print server • Without central print servers: .print Application Server Engine on terminal servers or .print Desktop Engine on virtual Desktops • if necessary: .print Connected Gateway license for each ISD400/410

Example configuration

By way of example, we will assume an environment with a central print server (Illus. 1). The components necessary for this example are:

- 1 print server, .print Engine installed
- 1 Intelligent Spooling Device SEH ISD400 (with integrated .print Client)
- 3 network printers (without integrated .print Client)



Illus. 1 Example configuration

- Notes
1. .print Client works exclusively with the protocol TCP/IP.
 2. This example illustrates ISD400 configuration without and with SSL encryption.

Installation

Printer and ISD400/410

- Attach the ISD400/410 and the network printers to the network (Illus. 1).

Central print server

- Install the *.print Engine v8.0* onto a print server under Windows Server 2003, 2008 or 2008 R2. Here, select **Print Server** as the **Server Role** (see the “.print Server Engine • Quick installation” manual, [Page 27](#)).


Configuration

Network










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

- for the central print server 192.168.129.201
- for the *ISD400/410* 192.168.129.202
- for the *OKI* network printer 192.168.129.180
- for the *HP* network printer 192.168.129.181
- for the *Lexmark* network printer 192.168.129.182

Client Gateway ISD400/410

1. Boot the ISD400/410 with its power button  at the front panel.¹ If after a moment, the ISD400/410 screen displays an IP address from your network (e.g., 192.168.129.100), then proceed with Step 3. If no IP address is displayed (0.0.0.0) or one that is not reachable from your computer, then continue with Step 2.

Tip: If no IP address appears on the ISD400/410 after booting (0.0.0.0), check the network connections.
2. Manually assign the ISD400/410 its IP address using the navigation keys and the display on the front. Proceed as follows:

Display	Action
ISDXXXXXX 0.0.0.0	• Press 
IP Setup Cancel	• Press  to confirm.
IP Configuration DHCP	• Select MANUAL with 
IP Configuration Manual	• Press  to confirm.
IP Address: 000.000.000.000	<ul style="list-style-type: none"> • Enter the IP address 192.168.129.202. Navigate with   within the IP address to the individual numbers and change the values with   • When the cursor is at the last digit, press  to confirm.

¹ With ISD300 (from hardware version 3 & higher), the arrow pointing downwards must be used instead to turn on.

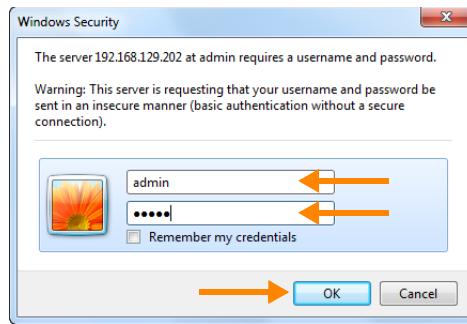
Display	Action
Netmask: 255.255.255.000	<ul style="list-style-type: none">• If necessary, change the net mask with the same cursor functions. Use to attain to the last digit.• When the cursor is at the last digit, press to confirm.
Gateway: 000.000.000.000	<ul style="list-style-type: none">• Enter the standard gateway's IP address. Use to attain to the last digit.• Press to confirm.
Apply	<ul style="list-style-type: none">• Press to confirm.
Back	

3. Open the ISD400/410 homepage with a web browser; use the IP address from the ISD400/410 screen as URL (e.g. 192.168.129.202; Illus. 2).
4. Click ADMIN.



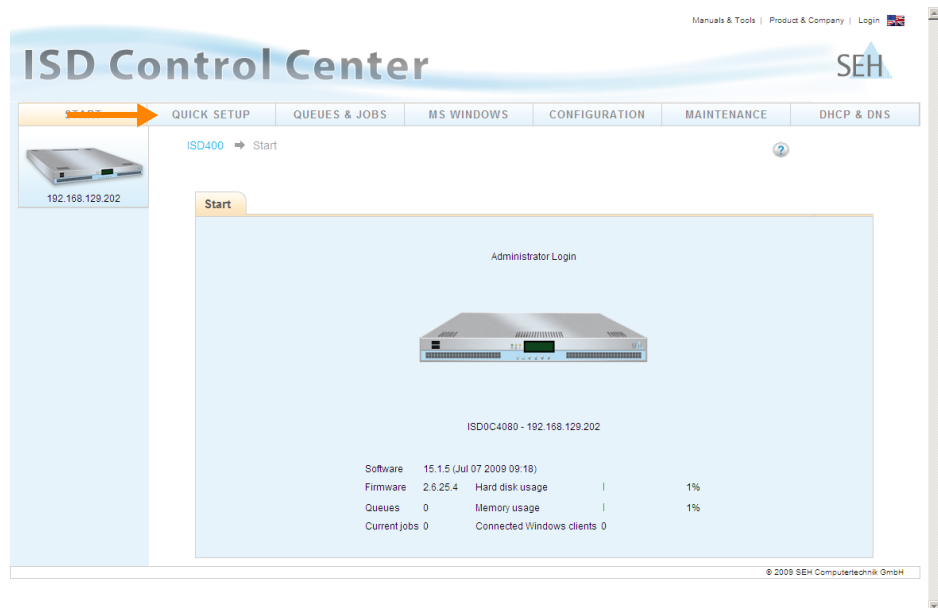
Illus. 2 ISD400 homepage: click ADMIN

5. Enter **Admin** as both **user name and password** (Illus. 3) and click OK to confirm. The user interface for an administrator is displayed (Illus. 4).



Illus. 3 Log on as Admin

6. Select QUICK SETUP (Illus. 4).



Illus. 4 User interface for administrator: select QUICK SETUP

7. If necessary, enter host name, date, and time, and click NEXT to confirm (Illus. 5).
Click OK to confirm if the message “Host name changed – click Ok to refresh” then appears.



Illus. 5 Check host name, date, and time and click NEXT to confirm

8. If DHCP has been enabled, change the IP address, disable DHCP, and click NEXT to confirm (Illus. 6).

Step 2

Network

IP address: 192.168.129.202
Subnet mask: 255.255.254.0
Gateway: 192.168.129.252
DNS server:
DHCP:

Next

Illus. 6 Change IP address if necessary and disable DHCP

9. Enter a first and last IP address for the printer search (max. 255 IP addresses) and click NEXT to confirm (Illus. 7).

Step 3

Find printers

Enter a start and end IP address for searching printers.
A maximum of 255 IP addresses can be searched through.
Searching takes about 15 seconds.
Leaving the form blank skips this step and finishes Quick Setup.

Start IP address: 192.168.129.1
End IP address: 192.168.129.254
Resolve IP addresses:

Next

Illus. 7 Enter first and last addresses for printer search

10. Click OK to confirm the message with the number of found printers. A list of found printers is displayed (Illus. 8).
11. Enter for each desired printer a name for its printer queue under QUEUE NAME²; in this example, **LexT630**. Click INSTALL and afterwards OK (to confirm the following message).

Step 4

Found printers

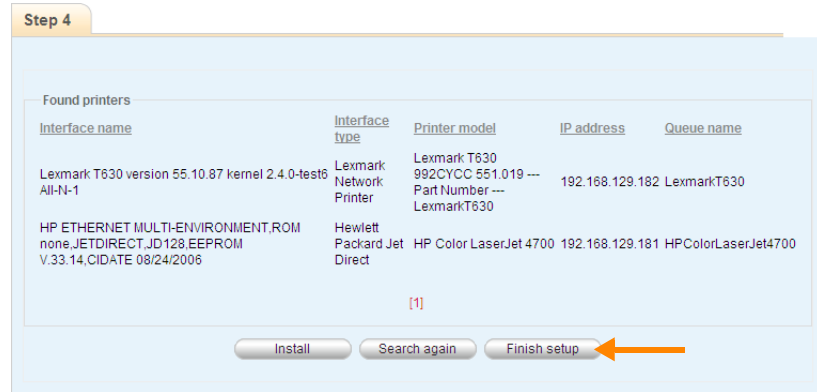
Interface name	Interface type	Printer model	IP address	Queue name
Lexmark T630 version 55.10.87 kernel 2.4.0-test6 All-N-1	Lexmark Network Printer	Lexmark T630 992CYCC 551.019 --- Part Number ---	192.168.129.182	LexmarkT630
HP ETHERNET MULTI-ENVIRONMENT.ROM none.JETDIRECT.JD128.EEPROM V.33.14.CIDATE 08/24/2006	Hewlett Packard Jet Direct	HP Color LaserJet 4700	192.168.129.181	HPCoLorLaserJet4700

[1]

Install Search again Finish setup

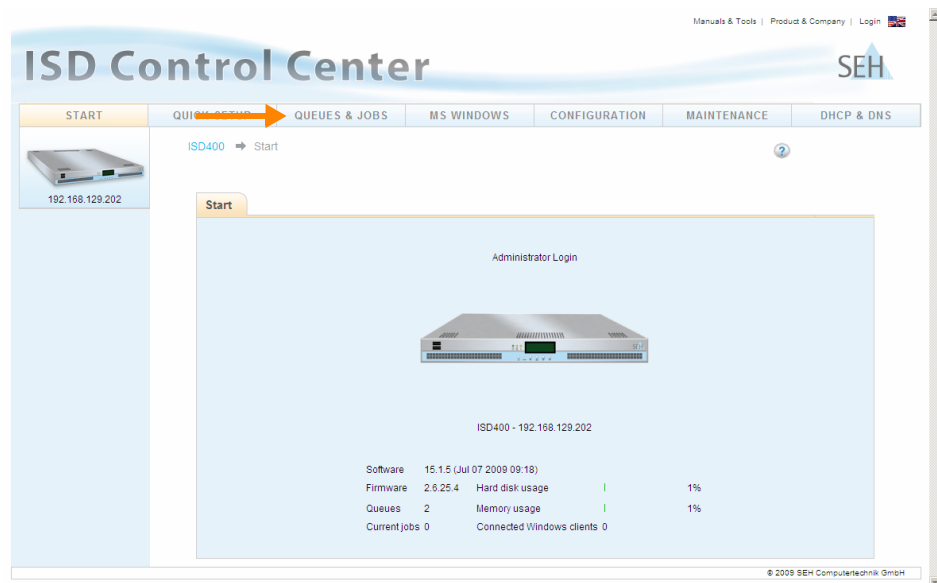
Illus. 8 Enter printer queue name(s) and click INSTALL to confirm

12. The queue name then appears without input field (Illus. 9).
Click FINISH SETUP and afterwards OK (to confirm the following message).
One of the three network printers (Illus. 1) was not automatically detected here; it will be created manually below.



Illus. 9 Click FINISH SETUP to confirm the queue(s) for network printer(s)

13. You are returned to the main menu.
To add the third network printer select QUEUES & JOBS (Illus. 10) and afterwards Create Queue (Illus. 11).



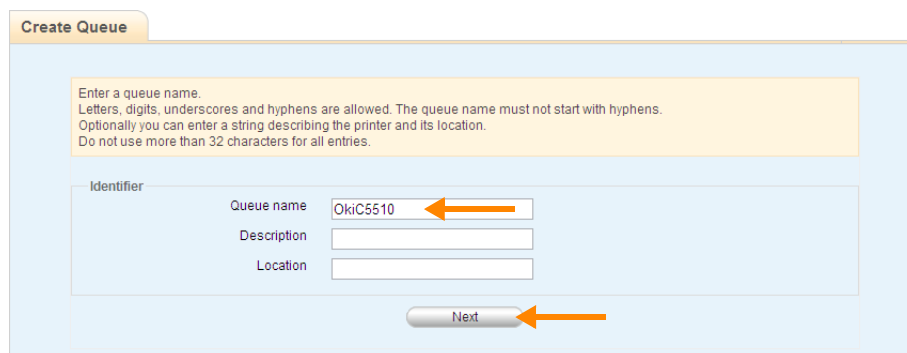
Illus. 10 Select QUEUES & JOBS

2 The queue names must begin with a letter; other than letters and numbers, hyphens - and underscores _ are allowed; max. 32 characters (Windows 9x: 15 characters).



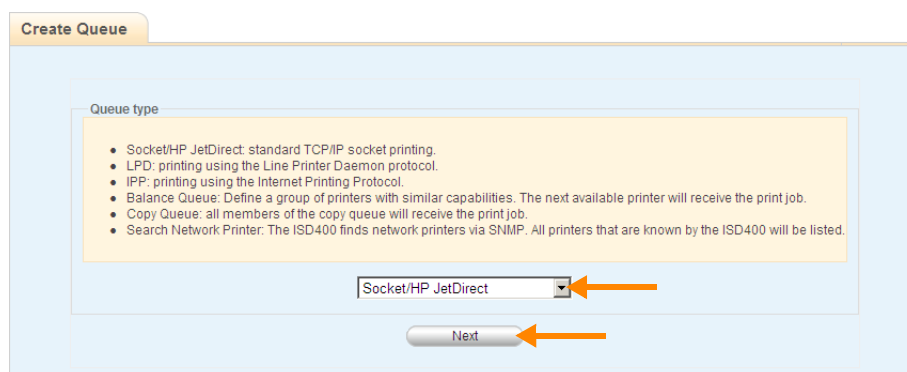
Illus. 11 Add remaining printers with CREATE QUEUE

14. Enter anything as queue name for the third network printer²; in our example: **Okic5510**. Click NEXT (Illus. 12).



Illus. 12 Specify queue name and click NEXT to confirm

15. Select as print protocol either SOCKET/HP JETDIRECT or LPD and click NEXT to confirm (Illus. 13).



Illus. 13 Select print protocol or device type and click NEXT to confirm

16. Enter the network printer's IP address and continue with NEXT (Illus. 14).
Click OK to confirm the following message (Illus. 15).

Illus. 14 Enter IP address

Illus. 15 Printer queue created for OKI C5510

17. Then select QUEUES & JOBS from the menu (Illus. 16).

Illus. 16 Click QUEUES & JOBS

18. You receive the menu shown in Illus. 17. From here, you can manage the created printer queues. Now the ThinPrint software must be enabled: the .print Client. Select THINPRINT from the menu.



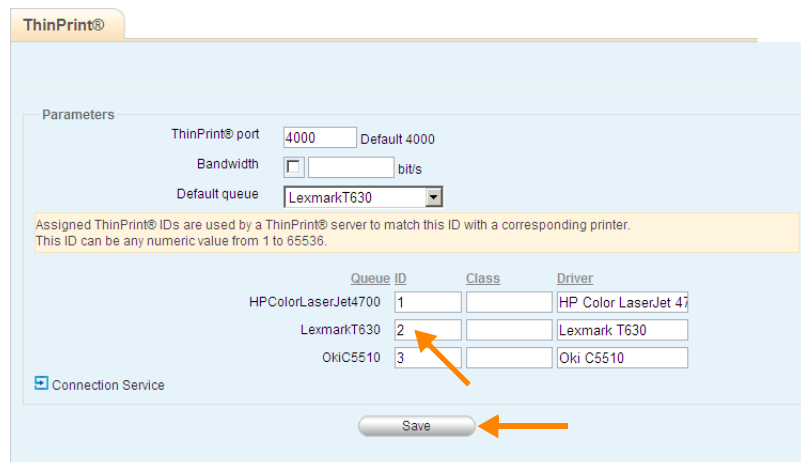
Illus. 17 Managing created printer queues

19. Assign any printer ID for each printer queue (the printer ID is necessary for ThinPrint to address the printers); in our example:

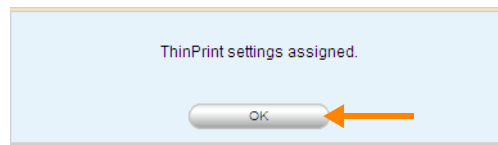
ID	Printer
1	HP Color LaserJet 4700
2	Lexmark T630
3	OKI C5510

Enter in the DRIVER column the name of the printer driver if the .print Management Center is used.

Click SET to confirm (Illus. 18) and afterwards OK to confirm the message (Illus. 19).



Illus. 18 Assign a ThinPrint printer ID for each printer



Illus. 19 .print Client is set up and active

Installing SSL/TLS certificates

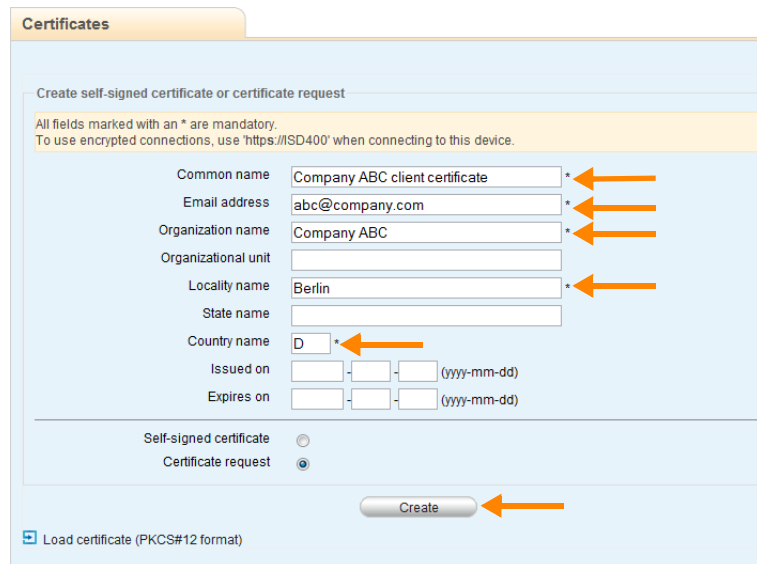
Requesting a certificate

- If you want to print with encryption, then select MAINTENANCE from the left side of the main window and then CERTIFICATE (Illus. 20).



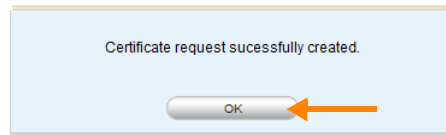
Illus. 20 ISD400 web page: select CERTIFICATE

- Delete an existing certificate by clicking DELETE if applicable.



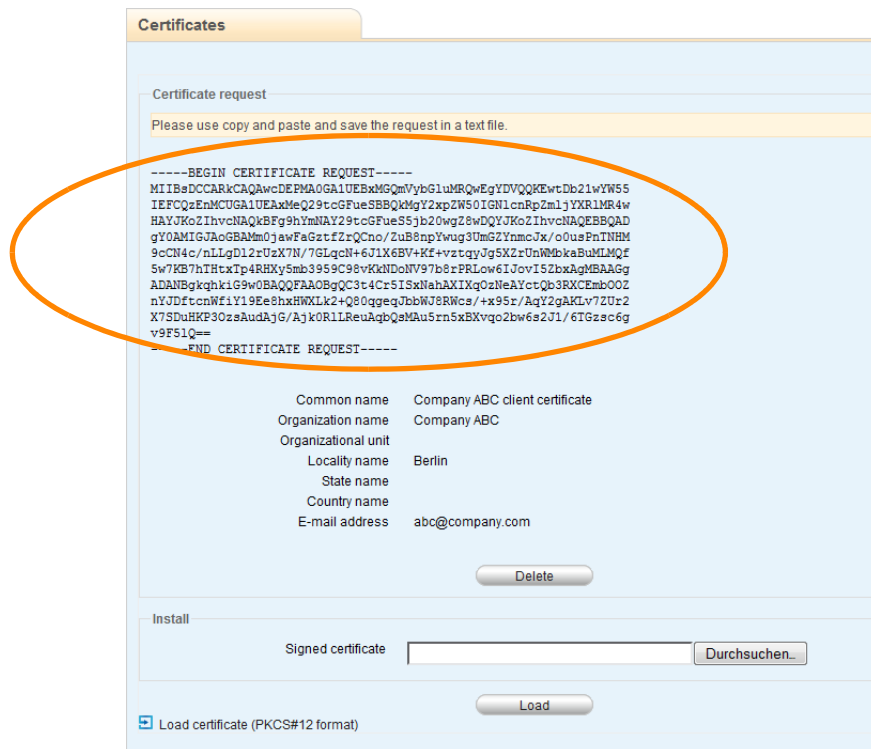
Illus. 21 ISD400 web page: fill in fields

- Fill in the next window (ILLUS. 21) 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.



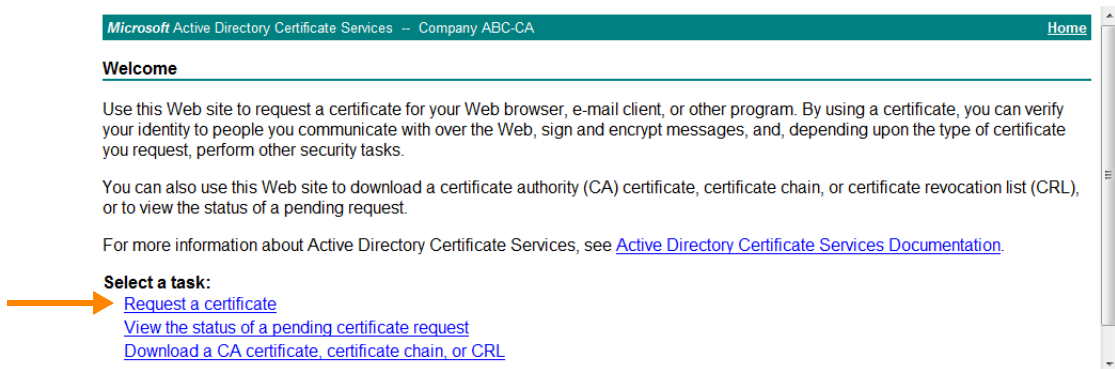
Illus. 22 Certificate request ready

- You will receive a messages stating that the request is created (Illus. 22). After clicking OK, the window in Illus. 23 appears with the 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.



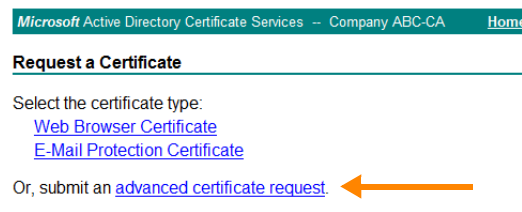
Illus. 23 ISD400 web page: certificate request

- Save the text file (e. g., an .rtf file) on any computer. From there, open the web page of the certificate server in the browser (Internet Explorer) by entering after the server IP address or host name, enter "/CERTSRV", for example, [HTTP://192.168.128.51/CERTSRV](http://192.168.128.51/CERTSRV).



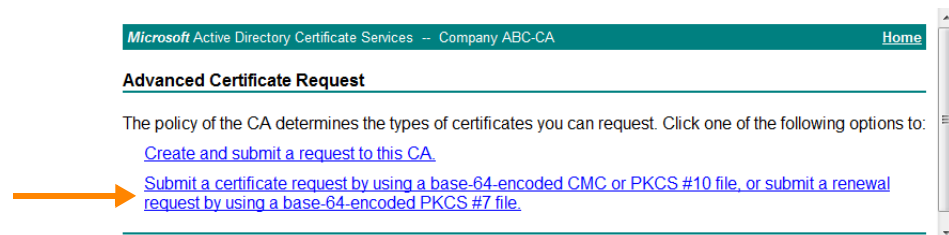
Illus. 24 Website Certificate Services: Request a certificate

- Once the website is open, request the client certificate by selecting REQUEST A CERTIFICATE (Illus. 24)³.



Illus. 25 Certificates server website: submit an advanced certificate request

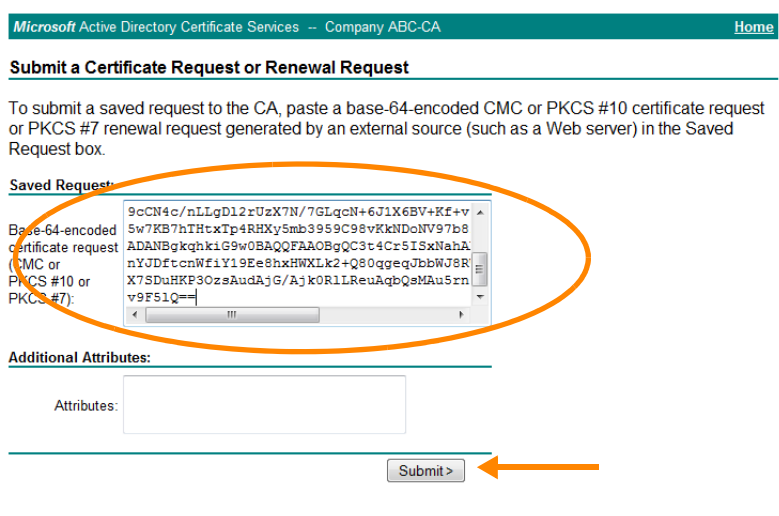
- A window opens like the one shown in Illus. 25. Click ADVANCED CERTIFICATE REQUEST.



Illus. 26 Certificate server web page: submitting a Base64 certificate request

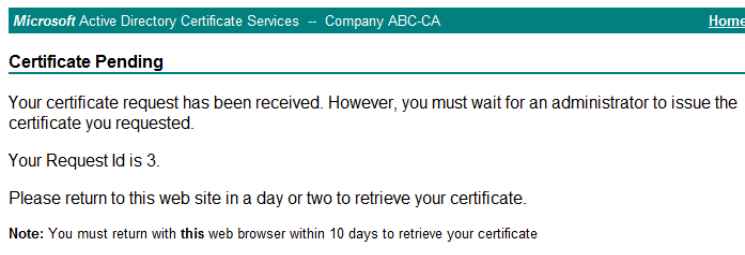
- For the ISD400/410 client certificate, you require a certificate that is coded with Base64. Therefore, select the lower link, as in Illus. 26. A window opens, in which you can enter your saved request (Illus. 27).

³ If the specified link is inactive, change the security settings in your browser (enable scripting, save web page as a trusted site).



Illus. 27 Certificate server web page: entering a Base64 certificate request

- In the top text field (Illus. 27, 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. 28).

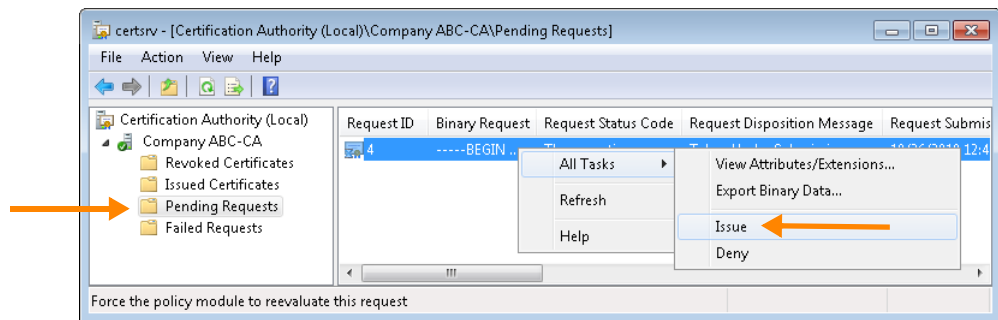


Illus. 28 Certification server website: certificate successfully requested

You will receive a message confirming that the certificate request was successful (Illus. 28). 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 next paragraph).

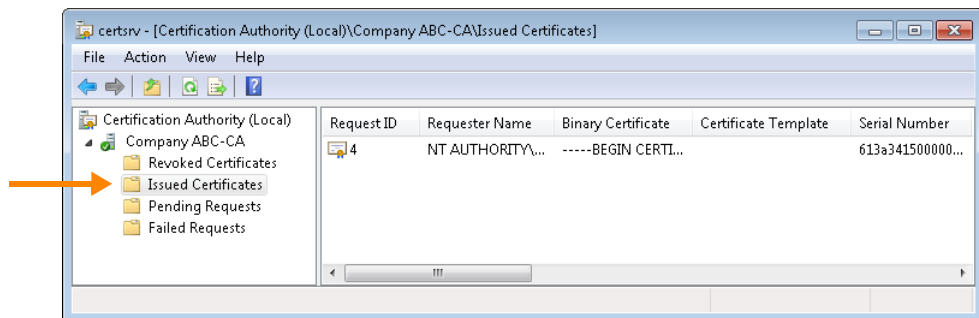
Certification server: issuing the client certificate

As administrator, you can see on the server which clients have requested a certificate. You have the choice of issuing or denying the requested certificates. To do so, click START → ADMINISTRATIVE TOOLS → CERTIFICATION AUTHORITY. Under PENDING REQUESTS, you will find the certificate requests (Illus. 29).



Illus. 29 Server certification authority: issuing requested certificates from the PENDING REQUESTS folder

- Choose the certificate and right click to select ALL TASKS→ ISSUE (Illus. 29). 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. 30).

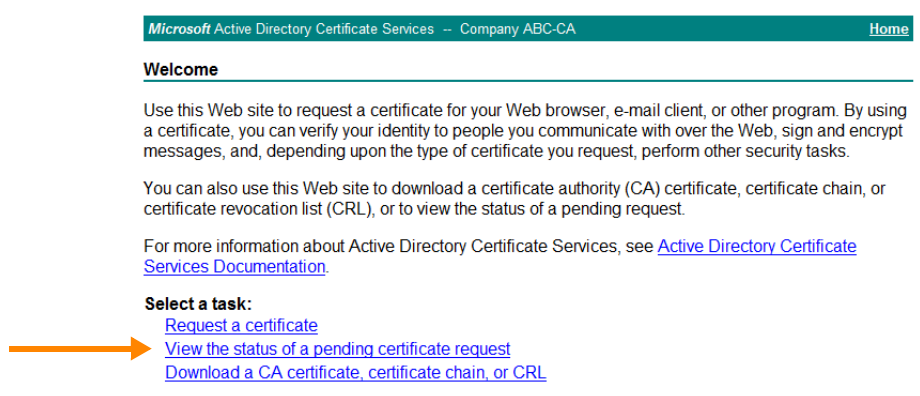


Illus. 30 Server certification authority: issued certificate in ISSUED CERTIFICATES folder

Importing and installing a client certificate for the ISD400/410

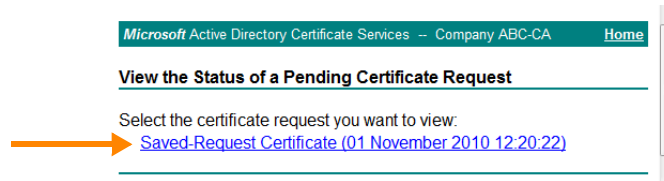
From the client machine, you can now get the certificate issued by the root certification authority from the certification server’s website:

- Open the same browser with which you submitted the certificate request (Illus. 24) and enter the server website again (example: HTTP://192.168.128.51/CERTSRV).



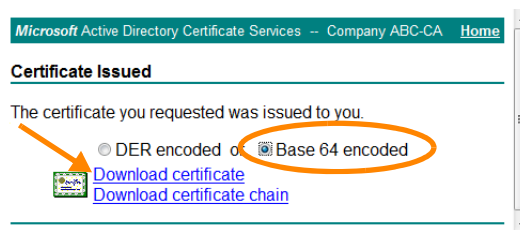
Illus. 31 Certification server website: selecting an issued certificate

- This time, select: VIEW THE STATUS OF A PENDING CERTIFICATE REQUEST on the website (Illus. 31).



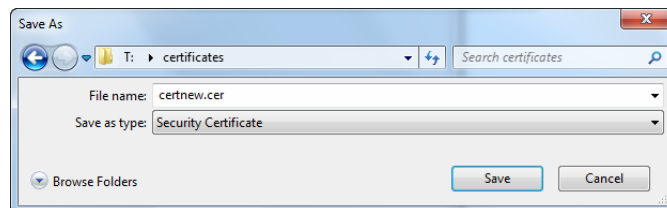
Illus. 32 Certification server website: selecting an issued certificate

- You will be given a list of certificates that have been issued by the server (Illus. 32). Select your certificate.



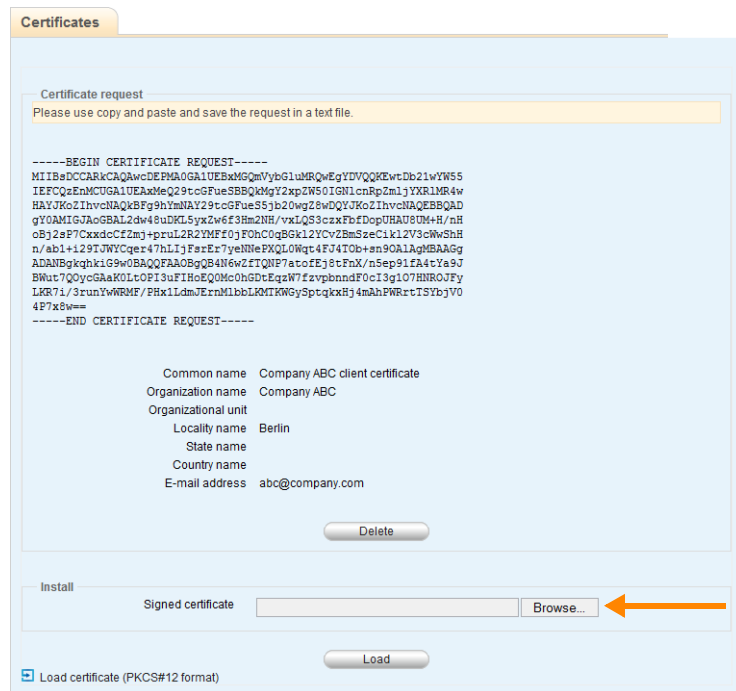
Illus. 33 Certification server website: install issued certificate

- You will receive a message confirming that the certificate was issued. Select the Base64 option as shown in Illus. 33 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 path where the certificate is to be saved in .cer format; e.g., on the desktop (Illus. 34).



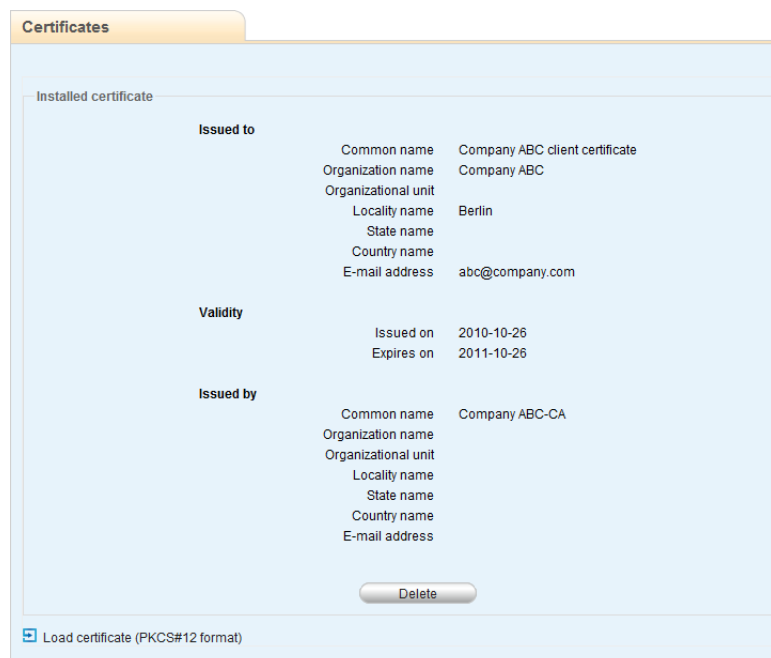
Illus. 34 Downloading the certificate (.cer file): save file locally

- Open the ISD400/410 web page again and select the .cer certificate that you just saved (Illus. 19) at the bottom by certificate file (Illus. 20).



Illus. 35 ISD400 web page: importing the certificate

- Once you have entered the path to the certificate as in Illus. 35, click LOAD. You will receive a message confirming that the client certificate has been successfully installed (Illus. 36).



Illus. 36 ISD400 web page: certificate successfully installed

- To complete configuration, simply close the web browser.

Terminal server

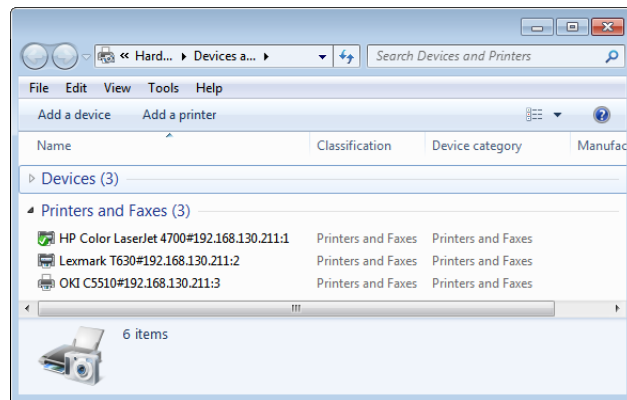
Creating printers

- Create printer objects on the terminal server for all printers connected to the ISD400/410. Install the relevant printer drivers. Associate these printer objects with a *ThinPrint Port*.
- Next, rename the printer objects in the following format:

```
printer_name#IP_address_ISD:printer_ID
```

In our example, this creates the three printers connected to the ISD400/410 (Illus. 37):

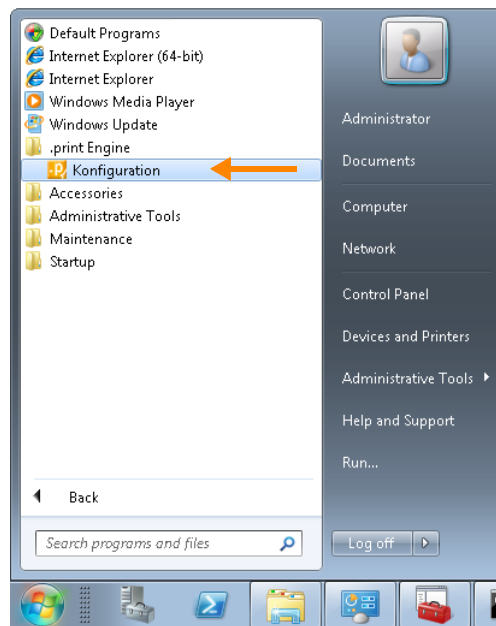
- HP Color LaserJet 4700#192.168.129.202:1
- Lexmark T630#192.168.129.202:2
- OKI C5510#192.168.129.202:3



Illus. 37 Printers folder on the terminal server

The IP address is the .print Client Gateway's (ISD400/410). The printer ID (at the end) is specified in the ISD400/410 (Illus. 18). The printer name (left of the #) is unimportant for addressing print data; it only serves to distinguish the printers.

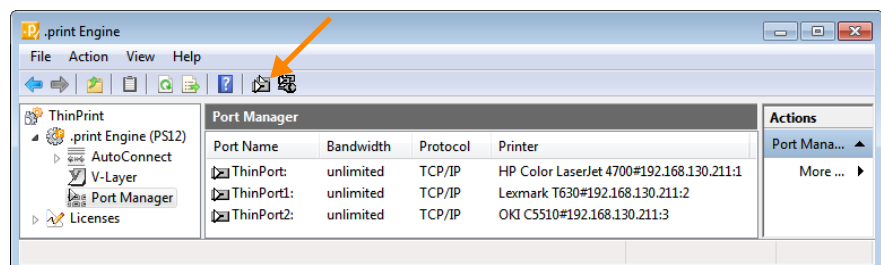
- Start ThinPrint Port configuration in the START menu. Click ALL PROGRAMS→ .PRINT ENGINE→ KONFIGURATION (Illus. 38).



Illus. 38 Starting configuration of ThinPrint Ports

- Check in ThinPrint Port configuration to ensure that all printer objects are associated with a *ThinPrint Port* and that the correct protocol and desired bandwidth are set (Illus. 39).

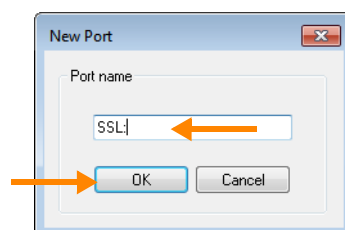
Done! The printer objects in Illus. 37 can now be accessed by all terminal server users. (These permissions can of course be modified over the printer object's permissions).



Illus. 39 ThinPrint port configuration on the terminal server

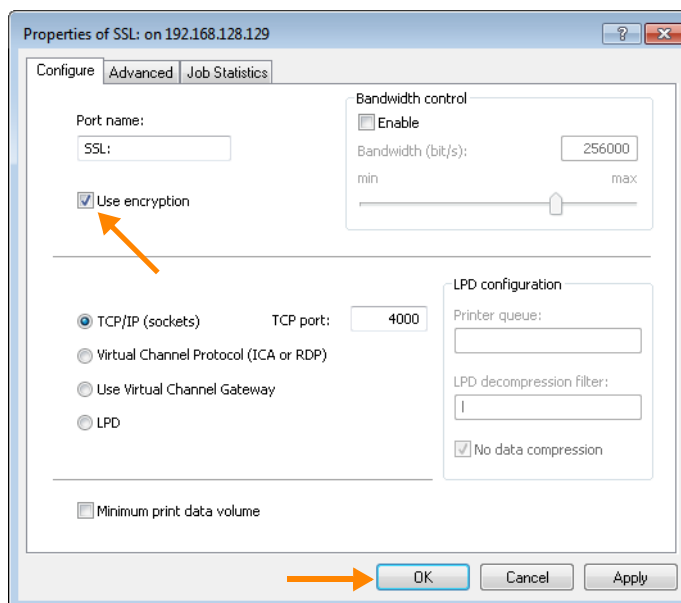
SSL/TLS encryption

1. To print both with and without encryption, add a new ThinPrint port by clicking the relevant icon (Illus. 39).
2. Enter a suitable port name (Illus. 40).



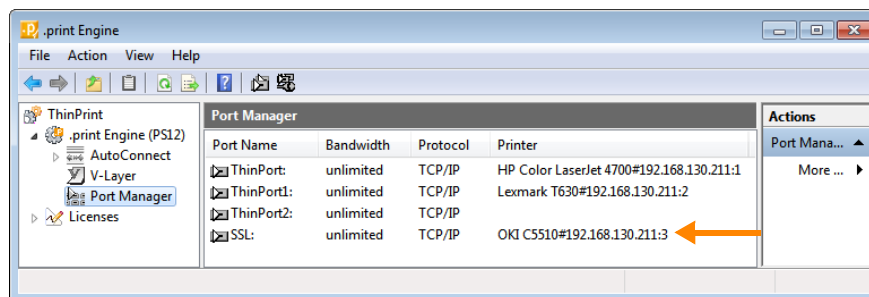
Illus. 40 MMC: adding a new ThinPrint port

3. Double click the new entry in the ThinPrint Port management. The menu in Illus. 41 appears.



Illus. 41 MMC: enabling SSL encryption

4. Select USE ENCRYPTION and click OK to confirm.
5. Open the printers folder and in the properties of the OKI printer, select the new "SSL:" ThinPrint port as port.
6. Return to MMC and refresh the view with the F5 key (Illus. 42). The OKI printer is now connected to the ThinPrint port that sends SSL-encrypted print data.



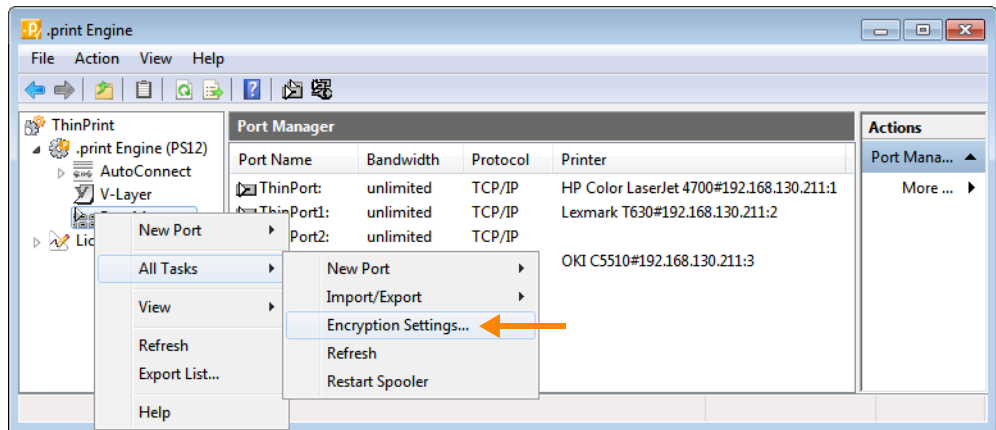
Illus. 42 MMC: new ThinPrint port with "reconnected" printer

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 Application Server Engine" user manual ([Page 27](#)).

2. To determine which of the installed certificates is used by .print Engine, open MMC again (Illus. 42) and select ALL TASKS→ ENCRYPTION SETTINGS from the .print Engine context menu (Illus. 43).
3. Enter the names of the server and root certificates (Illus. 44) and click OK to confirm.



Illus. 43 MMC: select encryption settings



Illus. 44 MMC: enter the names of the certificates

Test print

Now test your .print Client Gateway installation. Print from a terminal session to each printer (or directly from the server).

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

All print data is sent to the ISD400/410– the .print Client Gateway. After decompressing and decrypting it, the ISD400/410 forwards print data to the printer. Which printer receives what print job is decided by the printer ID (Illus. 18 and 37):

Printer	Printer ID in the ISD400/410
HP Color LaserJet 4700	1
Lexmark T630	2
OKI C5510	3

Additional configuration options

.print AutoConnect

The section on “Creating printers” ([Page 21](#)) describes how you can manually create printers that print with ThinPrint .print to the ISD400/410. The process of creating printers on a server can be automated with a component of the .print Engine – this component is called .print AutoConnect.

In the ThinPrint configuration of the ISD400/410, you only need to specify the printer IDs and, to further simplify things, possibly assign a class name for each printer (Illus. 45).

The screenshot shows the ThinPrint configuration window. Under the 'Parameters' section, there are fields for 'ThinPrint® port' (4000), 'Bandwidth' (checkbox), and 'Default queue' (LexmarkT630). Below this is a yellow warning box: 'Assigned ThinPrint® IDs are used by a ThinPrint® server to match this ID with a corresponding printer. This ID can be any numeric value from 1 to 65536.' A table below lists printer configurations:

	Queue ID	Class	Driver
HPColorLaserJet4700	1		HP Color LaserJet 47
LexmarkT630	2		Lexmark T630
OkiC5510	3		Oki C5510

Two orange arrows point to the 'Class' column for the LexmarkT630 and OkiC5510 rows. At the bottom, there is a 'Connection Service' checkbox and a 'Save' button.

Illus. 45 Assign printer IDs and class names

More information can be found in the white paper, “.print AutoConnect and .print Virtual Channel Gateway” as well as in the .print Engine user manuals ([Page 27](#)).

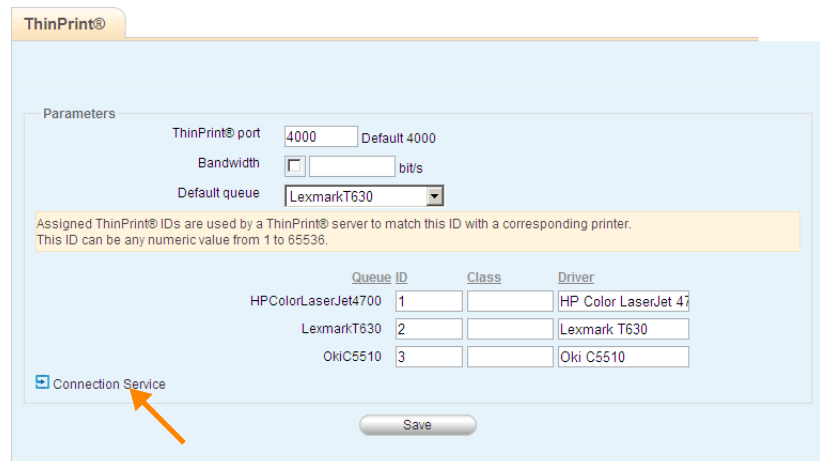
.print Connected Gateway

Unlike the usual direction of communication, the Connected Gateway also allows connections from a remote location to the central server and therefore enables the ISD400/410 to be addressed via TCP/IP, even in masked networks⁴. The .print Connected Gateway also stabilizes the transmission of print data, even during connection breaks of up to 90 seconds⁵. 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 ISD400/410.

In the ThinPrint configuration of the ISD400/410, you must select CONNECTION SERVICE from the menu (Illus. 46).

⁴ = Networks with Network Address Translation (NAT), which is mainly supported by routers

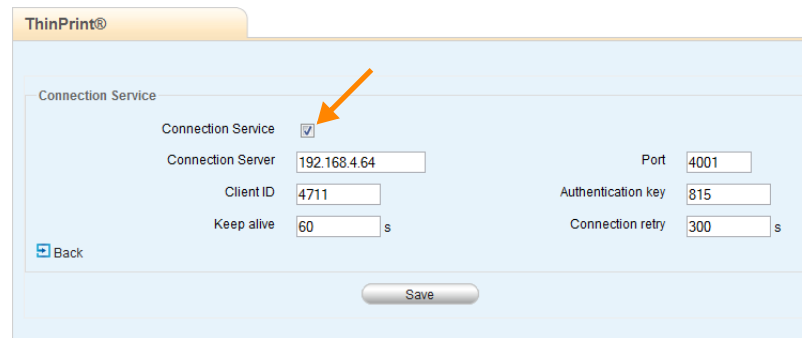
⁵ To bridge longer connection breaks, it is recommended to use the additional product, .print Queue Manager.



Illus. 46 ThinPrint printer IDs assigned for each printer queue

Illus. 47 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 servers 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
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)



Illus. 47 Configuring Connection Service

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

Appendix

Additional sources

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

Manuals The following SEH manuals are available at www.seh.de/ → PRODUCTS → PRINT SPOOL APPLIANCES → LARGE NETWORKS:

- ISD400/410 User Manual
- ISD400/410 Quick Installation Guide

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

- .print Application Server Engine
- .print Application Server Engine • Quick installation
- .print Server Engine
- .print Server Engine • Quick installation
- .print Engine for VMware View
- .print Management Center
- .print Desktop Engine
- .print Desktop Engine • Quick installation
- .print Connected Gateway
- .print Client user manuals



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

- Creating SSL certificates for printing with ThinPrint .print
- Licensing
- Windows machine as a .print Client Gateway
- SEH TPG60/120 as a .print Client Gateway
- SEH ISD200/300 as a .print Client Gateway
- Intermate IAPS ThinPrint as a .print Client Gateway