intermate

ThinPrint Client and Client Gateway in the Intermate100, Intermate101, and LAN FS3

Print Server Administration Manual: Update and Addendum

9 December 2002

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THINPRINT

1. Introduction

1.1. Products covered

This document applies to the following Intermate multi-protocol print servers:

- Intermate100 (based on the G22 software)
- Intermate101 (based on the G32 software)
- LAN FS3 (based on the K92 software)

The print server includes an embedded Thin Print client, which decompresses print data and transmits it to the printer.

1.2. About this document

This document is an addendum to the *LAN FS3 Print Server Administration Manual, 2nd edition, 13 February 2002 (KL-008-04)* . It also replaces the ThinPrint chapter in the *Intermate100 and Intermate101 Print Server Administration Manual, 7th edition (GG-100-07), 25 June 2002*.

1.3. Definitions and assumptions

This hardware is usually called a **print server**. When working with ThinPrint, it is important to avoid confusing this with the **ThinPrint server**. Therefore, we will call this product **client hardware**.

*In some ThinPrint documents, you will see the terms **print box** and **print card** used interchangeably. We avoid doing this, because the G22 and G32 software is used in external boxes, while the K92 software is used in an internal card.*

Assumptions

- You already have the necessary license(s) from ThinPrint and have the ThinPrint server set up.
- You have a browser equivalent to Microsoft Explorer 5.5 or higher.

- You have installed the hardware and assigned it an IP Address.

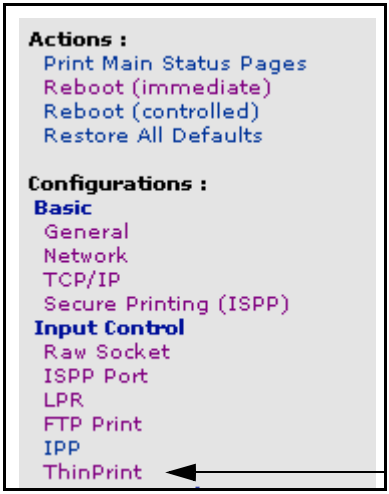
2. Enable ThinPrint

Log on to the management interface by typing the IP address into a browser. In our examples we use 192.168.130.219.

The user names is **admin** (case sensitive). Unless someone has worked with this particular device before, the password is also **admin** (case sensitive).

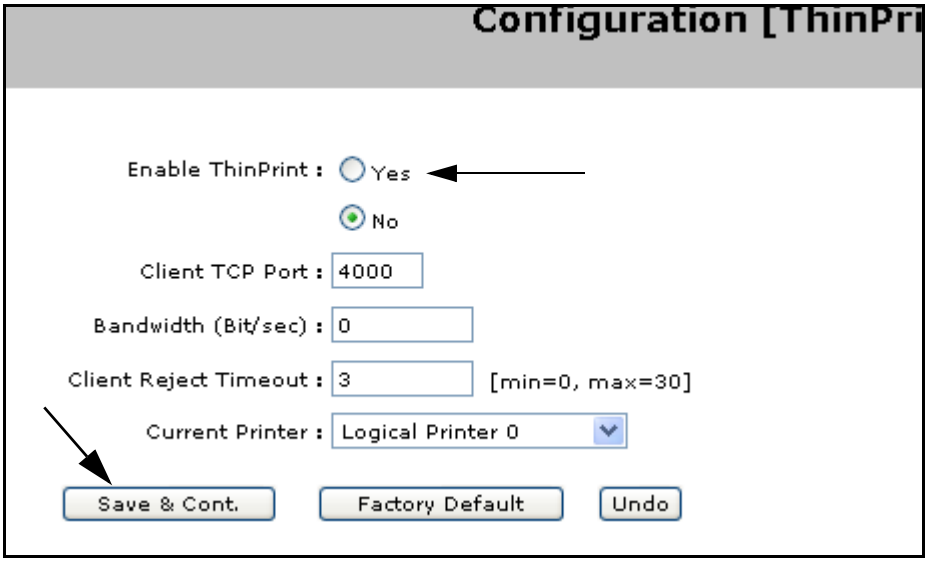
On the vertical menu bar to the left, find the group called configurations. In the subgroup called Input Control, choose ThinPrint.

Figure 1 Choose ThinPrint from the menu: Configurations > Input Control > ThinPrint



This results in the following configuration page being shown:

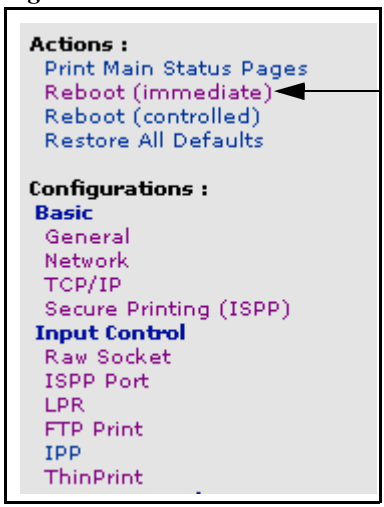
Figure 2 [ThinPrint] configuration page: Enable



Enable ThinPrint with the radio button. Leave the other settings alone. Click on "Save & Cont." (= save and continue).

Reboot the client hardware using the vertical menu bar to the left, as shown in figure 3.

Figure 3 Reboot



3. ThinPrint Server Considerations

On the ThinPrint server, you must create printer names to address one or more printers known to the client hardware. Printer names are sometimes called printer object definitions.

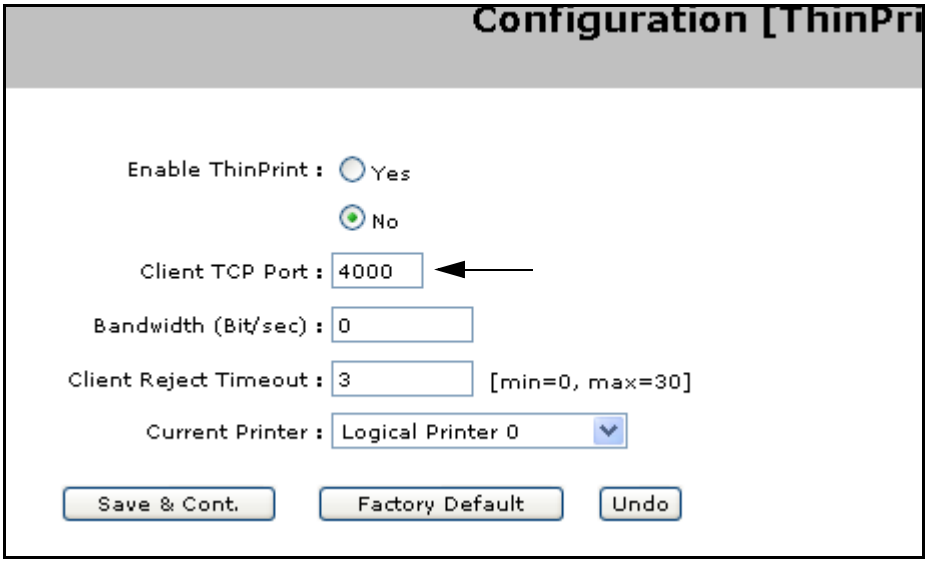
3.1. Print ports

All of the ThinPrint printers involved are defined on a single ThinPrint **TCP/IP port on the ThinPrint server**. Before going any further, check this port and take note of its number.

From the left menu for the client hardware, choose Configurations > Input Control > ThinPrint. Look at the value for **Client TCP Port**, whose default value is 4000. The Client TCP Port is what the client hardware listens on.

The setting for Client TCP Port on the client hardware must match the setting for the TCP/IP port on the ThinPrint server.

Figure 4 The [ThinPrint] configuration page: Client TCP Port



Remember to Save & Continue.

Reboot as shown on page 6.

3.2. Types of printer names

A ThinPrint printer name usually consists of two elements separated by a **#**-symbol.

IP_address#printer_name

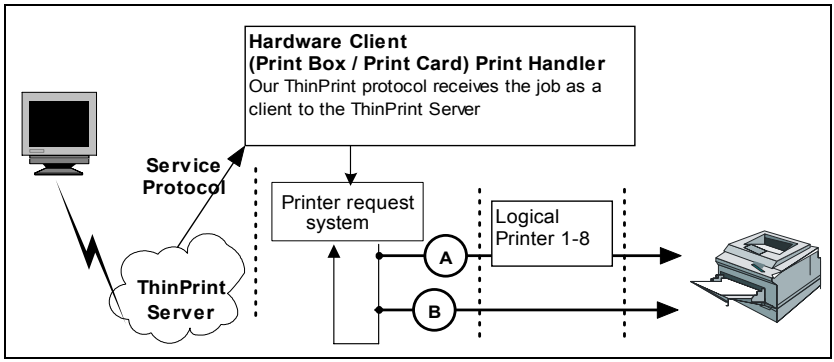
Note: The element printer_name is descriptive information. When you create a printer object on the server, the system will suggest the name of the printer driver as the printer_name element in the printer name.

We will call this a **simple printer name** in order to distinguish it from an **extended printer name**, which contains three elements. A printer_ID, which starts with a colon, must be inserted between the usual two elements. Said in another way, the printer_ID is placed between two separators, a colon **:** and the **#** symbol:

IP_address:printer_ID#printer_name

The basic design of this client hardware sends jobs to the physical target printers **indirectly via a so-called logical printer**, see figure 5, flow A.

Figure 5 Processing layers



A special case exists (B) where the job is sent **directly** to the physical target printer without going through the logical layer.

The printer_ID in a ThinPrint printer name has a built-in mapping to either the logical printer or the physical target printer. The following sections will show you what this means and how to use it.

4. ThinPrint Client or ThinPrint Client Gateway?

It is possible to use this client hardware either as a ThinPrint Client or as a ThinPrint Client Gateway.

4.1. Client

A **client** serves one printer, and the setup has the following characteristics:

- one target printer, the **local printer**
- physical installation of the client hardware

Instructions are in section 5, starting on page10.

4.2. Client gateway

The client hardware becomes a **gateway** when the Network Destination Option (NDO) is enabled. NDO is standard in G32-based hardware. For G22- and K92-based hardware you must buy and enable a special license key for NDO. The setup for the client gateway has the following characteristics:

- up to four target printers on the LAN network; these are called **network destinations**
- external boxes (G22- andG32-based software) offer the possibility for attaching the client hardware to the printer's parallel port, thus adding the **local printer** as an additional target printer; internal cards (K92-based software) always have the local printer as a possibility

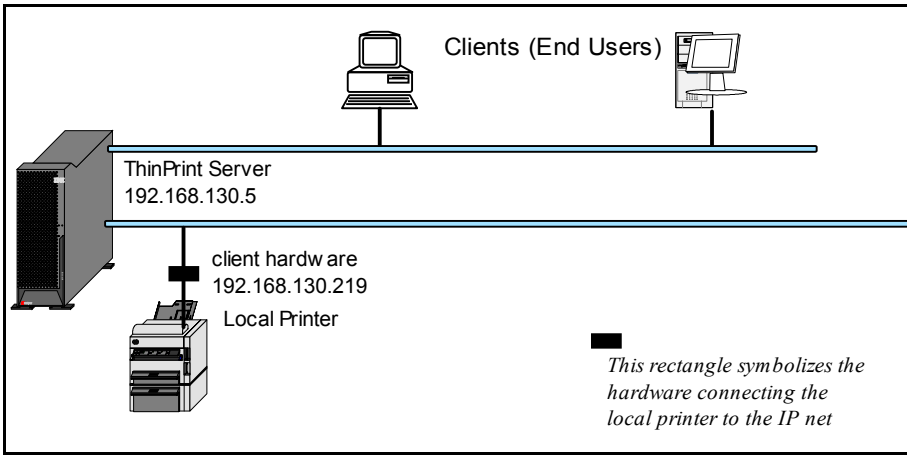
Instructions are in section 6, starting on page14.

5. ThinPrint Client

5.1. Basic setup with one printer

The example in figure 6 below shows this kind of setup.

Figure 6 Physical set up, local printer only (example)



There are two different approaches for creating ThinPrint printer names depending on the kind of jobs that will be sent.

a Addressing the printer directly with logical printer 0 for jobs not requiring any special processing, see section 5.2 [page 11].

b Addressing the printer indirectly with logical printers 1-8 for jobs requiring special processing, see section 5.3 [page 11].

Definition of special processing

Special processing means string before the job, string after the job, and/or string substitution within the job.

5.2. No special processing

Targetting type

For all practical purposes this is **direct targetting**, situation B in figure 5 [page 8]. However, within the client hardware, the output is considered to go through **logical printer 0** (zero, null, nil). Logical printer 0 cannot do any special processing.

ThinPrint printer name

To reach the target, use a **simple** ThinPrint printer name. In our example, the ThinPrint server would suggest the following name:

192.168.130.219#Kyocera FS7000.

5.3. Jobs requiring special processing

Targetting type

Besides logical printer 0, the client hardware has 8 **configurable logical printers**. They are called logical printer 1, logical printer 2, etc. up to and including logical printer 8. When you print to a configurable logical printer, you are doing **indirect targetting**, situation A on figure 5 [page 8].

Configuring logical printers 1-8

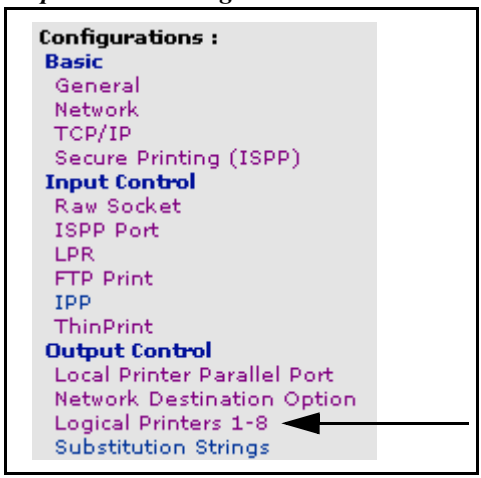
A configurable logical printer contains two types of configuration information:

- the type of special processing desired
- the physical printer to target.
  In this setup, it just happens that there is only one printer. On the pull-down list of values for a logical printer's target printer, this printer is called "Local (0"), and it is the default value.

The configuration page needed to define logical printers is called **Logical Printers 1-8**. It is is found in the Configurations > Output Control group (figure 7 [page 12]).

Please consult the "Print Server Administration Manual" for details about how to configure logical printers and string substitutions.

Figure 7 Output control > Logical Printers 1-8



ThinPrint printer names

In order to address a configured logical printer, you must use **extended** ThinPrint printer names.

Example: When you create a printer in the setup shown in figure 6 [page 10], the system proposes this simple name:

192.168.130.219#Kyocera FS7000

Now you must change the name to an extended name, following this structure:

192.168.130.219:printer_ID#Kyocera FS7000

You are free to change the printer_name element (the last element) in the name, as long as you do not delete the # symbol.

The IP address is, of course, the IP address of the client hardware. The printer_ID element tells the client hardware where to send the job according to the mappings shown on figure 8 [page 13]

Figure 8 Mappings to local printer, logical printers 1-8

Where the output is sent by the client hardware	***ThinPrint* Printer_ID**	***ThinPrint* printer name (given the example in figure 6 [page 10])**
Logical Printer 1	21	192.168.130.219:21#Kyocera FS7000
Logical Printer 2	22	192.168.130.219:22#Kyocera FS7000
Logical Printer 3	23	192.168.130.219:23#Kyocera FS7000
Logical Printer 4	24	192.168.130.219:24#Kyocera FS7000
Logical Printer 5	25	192.168.130.219:25#Kyocera FS7000
Logical Printer 6	26	192.168.130.219:26#Kyocera FS7000
Logical Printer 7	27	192.168.130.219:27#Kyocera FS7000
Logical Printer 8	28	192.168.130.219:28#Kyocera FS7000

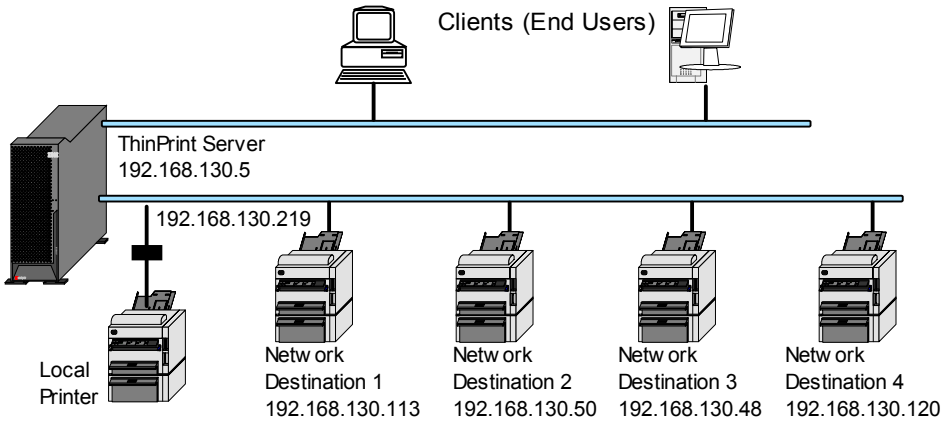
See the sections on "Current Printer" [page 22] and "Trouble-shooting" [page 26] for information on what happens if you use incorrect printer IDs.

6. ThinPrint Client Gateway

6.1. Basic setup with up to five printers

As mentioned in section 4 [page 9], if you want to make this client hardware into a ThinPrint Client Gateway, you must use NDO. The example in figure 9 below shows this kind of setup.

Figure 9 Physical setup with "NDO"



Setting up the network destinations

The configuration pages needed to set up network destinations are found in the Configurations > Output Control group (figure 10).

Figure 10 Output Control group > NDO

The NDO configuration page (figure 11) has room for configuring four Network Destinations:

Figure 11 NDO Configuration

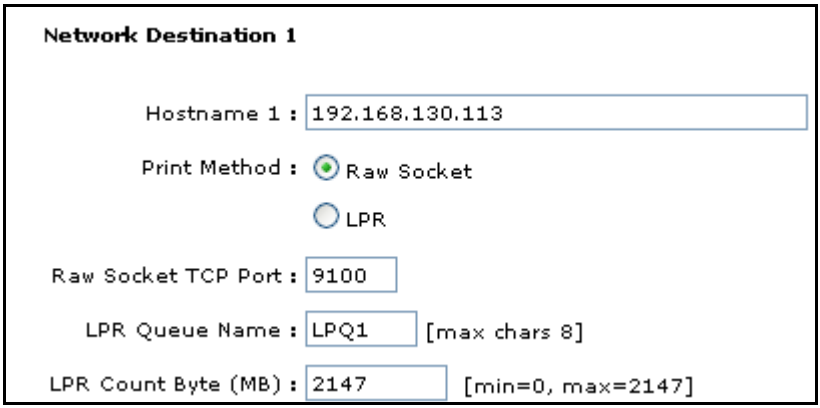


Figure 12 [page 15] shows how the mappings between all four network destinations and their IP addresses (host names) could look, given the setup shown in our example (figure 9 [page 14].

Figure 12 NDO mappings in the client hardware - plus information on the printer involved - example

Mapping of network destinations to IP addresses		**Printer (this information is only found in the ThinPrint printer name definitions, not in the client hardware).**
Network Destination 1	192.168.130.113 (this IP is NDO Hostname 1)	HP Laser Jet 4si
Network Destination 2	192.168.130.50 (this IP is NDO Hostname 2)	HP Laser Jet 5si
Network Destination 3	192.168.130.48 (this IP is NDO Hostname 3)	Lexmark T620 PS
Network Destination 4	192.168.130.120 (this IP is NDO Hostname 4)	Lexmark T620 PCL6

ThinPrint printer names—general principles

When you use NDO, you must **always** use **extended** ThinPrint printer names on the ThinPrint server in order to reach the target. When you create a printer in the setup shown in figure 9 [page 14], the system proposes the simple name:

192.168.130.219#Kyocera FS7000

Now you must change the name, and the result must be an extended name, following this structure:

192.168.130.219:printer_ID#Kyocera FS7000

You are free to change the printer_name element (the last element) in the name, as long as you do not delete the # symbol.

There are two different approaches for creating ThinPrint printer names depending on the kind of jobs that will be sent.

a Addressing the printer directly to network destinations 1-4 for jobs not requiring any special processing; see section 6.2 [page 16].

b Addressing the printer indirectly, using logical printers 1-8, for jobs requiring special processing and/or load balancing among a group of up to 5 physical printers of the same type; see section 6.3 [page 17].

Definition of special processing

Special processing means string before the job, string after the job, and/or string substitution within the job.

6.2. No special processing

Targetting type

Targetting is done **directly** to the local printer or network destination, situation B in figure 5 [page 8].

Chain of mappings

- Each possible physical printer has an IP address; an example of mappings is shown in figure 12 [page 15].
- The client hardware uses the Printer_ID to find a physical target printer.

ThinPrint printer names—examples

Figure 13 Direct target mappings with NDO - example

Where the output is sent by the client hardware	ThinPrint Printer_ID	Extended *ThinPrint* printer name (given the example in figure 9 [page 14]
Local	1	192.168.130.219:1#Kyocera FS7000
Network Destination 1	11	192.168.130.219:11#HP Laser Jet 4si
Network Destination 2	12	192.168.130.219:12#HP Laser Jet 5si
Network Destination 3	13	192.168.130.219:13#Lexmark T620 PS
Network Destination 4	14	192.168.130.219:14#Lexmark T620 PCL6

See the sections on "Current Printer" [page 22] and "Trouble-shooting" [page 26] for information on what happens if you use incorrect printer IDs.

6.3. Jobs requiring special processing

Targetting type

The client hardware has 8 **configurable logical printers**. They are called logical printer 1, logical printer 2, etc. up to and including logical printer 8. When you print to a configurable logical printer, you are doing **indirect targetting**, situation A on figure 5 [page 8].

Chain of mappings

- Each possible physical printer has an IP address; an example of mappings is shown in figure 12 [page 15].
- Each logical printer (1-8) includes information on where to send the output (instructions for this part of setting up a logical printer are shown below, page 18).
- The client hardware uses the Printer_ID to find a logical printer (1-8).

Configuring logical printers 1-8

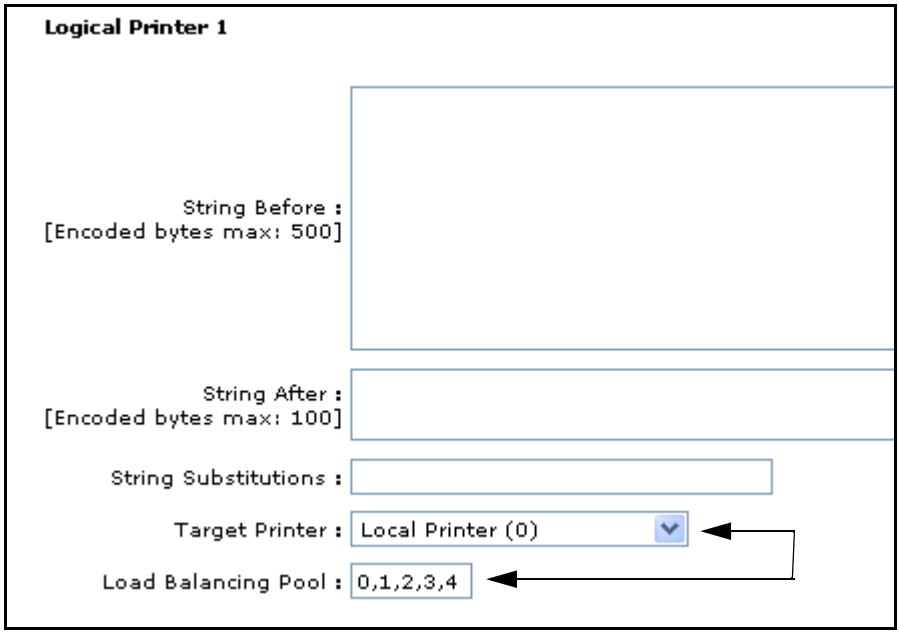
A configurable logical printer contains two types of configuration information:

- the type of special processing desired.
  You need to plan how you want to combine the desired printer's location (IP address) with the special processing and string substitution available through logical printers 1-8
- the physical printer or load balancing pool of printers to target, as explained below

Target printer for a logical printer

The configuration page needed to define logical printers is called **Logical Printers 1-8**. It is is found in the Configurations > Output Control group (figure 7 [page 12]).

Figure 14 Definition of a logical printer: Target Printer



The value list for Target Printer includes the following:

- Local Printer (0)
- Network Destination 1 (1)

- Network Destination 2 (2)
- Network Destination 3 (3)
- Network Destination 4 (4)
- Pool.

The numbers in parentheses (0), (1), (2), (3), (4) are numbers used to define a so-called Load Balancing Pool.

Load Balancing Pools

It is possible to choose a pool of printers as Target Printer instead of just choosing a single printer.

If you choose pool as Target Printer for a logical printer, you must also define the pool in the Load Balancing Pool field.

The numbers you enter refer to the up to five physical printers in your setup. The order of entry reflects the priorities you want used within the pool.

Please consult the "Print Server Administration Manual" for details about how to configure logical printers and string substitutions, and for details about how to define and use a load balancing pool as the target for a logical printer.

ThinPrint printer names—examples

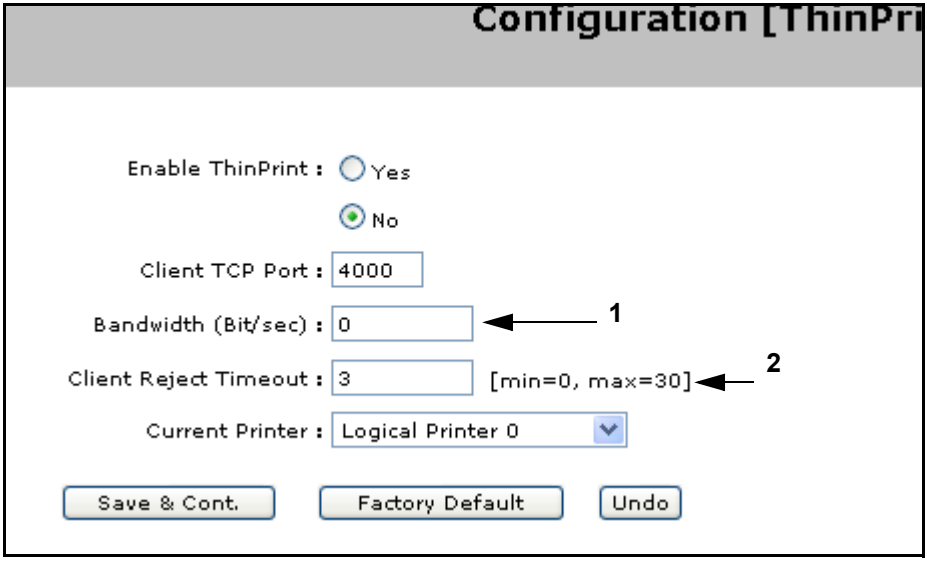
Figure 15 Printer names for indirect targetting to network destinations

Output to Logical Printer ...	**This logical printer targets, for example:**	***Thin-Print* Printer_ID**	***ThinPrint* extended printer name (given the setup example in figure 9 [page 14]**
1	NetwDest 4	21	192.168.130.219:21#Lexmark T620 PCL6
2	NetwDest 2	22	192.168.130.219:22#HP Laser Jet 5si
3	NetwDest 1	23	192.168.130.219:23#HP Laser Jet 4si
4	NetwDest 1	24	192.168.130.219:24#HP Laser Jet 4si
5	NetwDest 3	25	192.168.130.219:25#Lexmark T620 PS
6	Local	26	192.168.130.219:26#Kyocera FS7000
7	NetwDest 3	27	192.168.130.219:27#Lexmark T620 PS
8	NetwDest 4	28	192.168.130.219:28#Lexmark T620 PCL6

See the sections on “Current Printer” [page 22] and “Trouble-shooting” [page 26] for information on what happens if you use incorrect printer IDs.

7. Fine tuning the [ThinPrint] configuration

Figure 16 [ThinPrint] configuration page - Fine tuning:



7.1. Bandwidth (bit/sec.)

The client hardware can perform client-side reduction of bandwidth so that even less bandwidth is used than specified by the *Thin-Print* server.

Default value is 0, which means disabled. Check with your network or server administrator for a suggested value if this feature is to be enabled.

7.2. Client Reject Timeout

This parameter tells the ThinPrint client how long to wait in minutes before rejecting the print job after a printer has been in

an intervention mode. Examples: paperout, paperjam, toner-low, and offline.

Figure 17 Values for Client Reject Timeout

Value in	Comment
0	Disable Client Reject Timeout. This will give an indefinite wait for a target ready.
1	Minimum value in minutes.
3*	Default value in minutes. Recommended range is from 3 to 5 minutes.
30	Maximum value in minutes.

If the target has been in intervention mode more than the time set here, the print job will be rejected.

This is a useful feature because each ThinPrint port on the ThinPrint Server is used by all the printers served by a client gateway. Client Reject Timeout clears the queue of jobs that have been held up by paperout (etc.), so that the other printers' jobs can be processed.

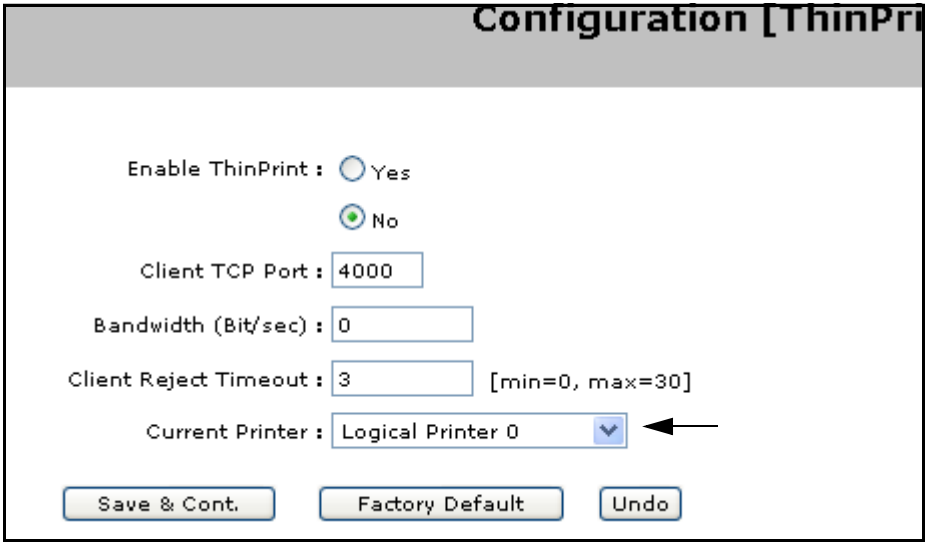
When a spool file is removed from the queue, the messenger service on your PC will indicate that the job is "finished printing". If you cannot find the hard copy output, check the "Event log" on the ThinPrint server, where you will be able to determine whether or not the disappearance is due to a client reject timeout.

Note that this feature cannot help you if a printer is down because it is shut off (target error). One way of determining whether or not the printer in question is turned off is to choose "Target Printer Info" in the Status group on the HTTP menu of the client hardware.

8. Current Printer

You may have noted that there is no parameter called "Output to" on the [ThinPrint] configuration page and/or, you may have noticed that there is a parameter on the page that we haven't covered yet. This parameter is called Current Printer.

Figure 18 [ThinPrint] configuration page - Current Printer



8.1. Current Printer: purpose and values

The ThinPrint implementation in this client hardware is based on using printer_IDs. Correct targetting requires the use of extended printer names.

> *The only exception is when you address a printer through logical printer 0 (as in section 5.2 [page 11],*

If you use an extended printer name containing a valid printer_ID, the value for Current Printer is irrelevant. The job output will be directed to the logical and/or physical printer mapped to the printer_ID.

There are two cases for which Current Printer provides a fall back:

A The printer name lacks an ID.

You can actually consider the use of a simple ThinPrint name as shown in section 5.2 [page 11], as incorrect addressing, which, however, doesn't matter, because there is only one physical printer involved

B An extended ThinPrint printer name contain an invalid printer_ID (see section 8.2 [page 24]).

Values for Current Printer are shown in figure 19.

Figure 19 Values for Current Printer = where to send misdirected jobs

Value	Setup: Client (not using NDO)
Logical Printer 0.	This is default from the factory. It can never perform special processing, and it always prints to the System Target Printer (see page 25). This setting should always be used, with only one exception, see next row.
Logical printer n, where n can be any integer in the interval [1-8]	If you want to be sure that all misdirected jobs end up being processed in some way then choose the logical printer n which provides that processing. The processing in question could, for example, be a string before which creates a banner page at the start of the job.

Value	Setup: Client Gateway (using NDO)
Logical Printer 0.	This is default from the factory. It can never perform special processing, and it always prints to the System Target Printer (see page 25). Choose this if you want to avoid special processing on misdirected jobs, **and** would rather let the choice of physical ouput follow the definition for System Target Printer instead of choosing a Network Destination directly (as in next row).
Local Printer, Network Destination n, where n can be any integer in the interval [1-4]	Any one of these are a good choice if you always want misdirected job to end up at a particular physical printer . without any special processing
Logical printer n, where n can be any integer in the interval [1-8]	If you want to be sure that all misdirected jobs end up being processed in some way then choose the logical printer n which provides that processing. The processing in question could, for example, be a string before which creates a banner page at the start of the job, The physical printer chosen will be that defined on the logical printer configuration.

Values for valid printer_IDs are shown on figure 20 [page 24].

8.2. Valid printer_IDs

Figure 20 List of valid Printer_IDs

ThinPrint Printer_ID	**Where the output is sent by the print server**	**When is this Printer_ID valid?**
21	Logical Printer 1	always
22	Logical Printer 2	always
23	Logical Printer 3	always
24	Logical Printer 4	always
25	Logical Printer 5	always
26	Logical Printer 6	always
27	Logical Printer 7	always
28	Logical Printer 8	always
1	Local	when NDO is enabled
11	Network Destination 1	when NDO is enabled
12	Network Destination 2	when NDO is enabled
13	Network Destination 3	when NDO is enabled
14	Network Destination 4	when NDO is enabled

Any number not in the above list is invalid, and will result in the output being sent to "Current Printer".

The validity of numbers on the list depends on whether or not NDO is enabled.

A number from the set {21, 22, 23, 24, 25, 26, 27, 28} is always valid as a Printer_ID.

A number from the set {1, 11, 12, 13, 14} is a valid Printer_ID when NDO is enabled, but provokes a fatal error when it is not.

See section 10.1 [page 26] regarding this and other kinds of fatal errors.

9. About the System Target Printer

This parameter is defined on the General page in the Configurations > Basic group.

Figure 21 Configurations > Basic > General

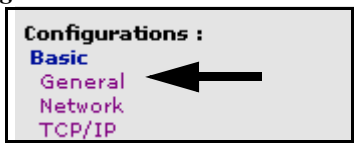
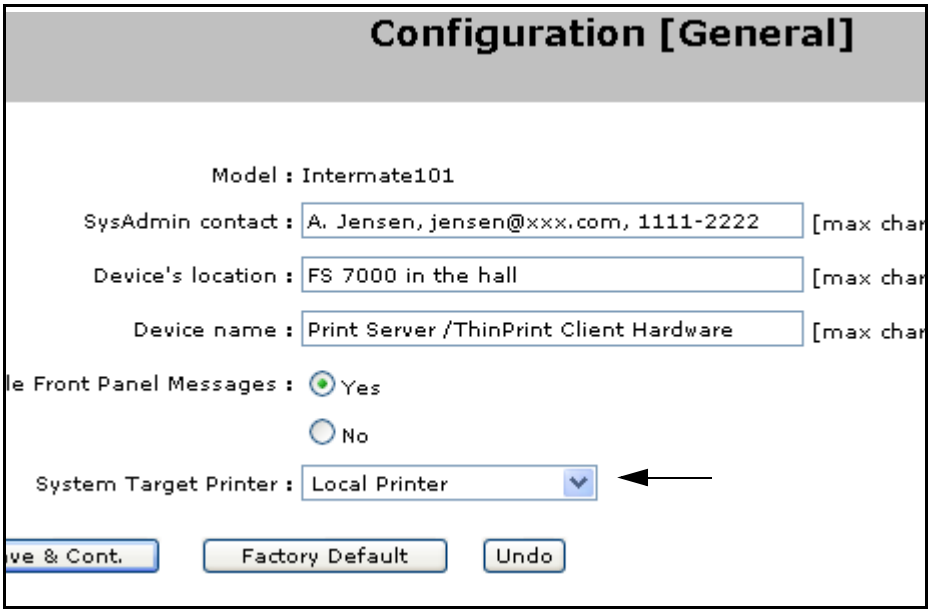


Figure 22 [General] Configuration page



The System Target Printer is where the client hardware sends configuration information ("Print Main Status Pages" in the Actions group) and prints the mini-manual ("Quick Guide" in the Help group).

Values for System Target Printer:

- Local (this is the only choice if you do not have NDO enabled)

- Network Destination 1
- Network Destination 2
- Network Destination 3
- Network Destination 4

10. Troubleshooting

10.1. Fatal errors

When the client hardware receives the job, it creates a spool file. If there is a fatal addresssing error, this spool file is deleted. A message is written to the System Log in the client hardware. Printer monitoring on the ThinPrint server side will report that the job is completed (i.e. it is no longer in the queue), and you will not find the physical output anywhere.

Fatal errors usually fall into one of the following four categories:

A A fatal error is provoked when a printer_ID sends the job to a physical printer which is wrongly configured, turned off, or in an intervention mode.
It doesn't matter whether the printer_ID in question is from the set {1, 11, 12, 13, 14}, with direct physical targetting, or from the set {21, 22, 23, 24, 25, 26, 27, 28}, where the job output reaches the physical target via a logical printer.

B A fatal error is provoked when a printer_ ID chosen from the set {21, 22, 23, 24, 25, 26, 27, 28} sends the job to a logical printer which is not fully and correctly set up.

C A fatal error is provoked when a printer_ID chosen from the set {1, 11, 12, 13, 14} sends the job to a Network Destination which is not fully and correctly set up ("Setting up the network destinations" [page 14]).

D As mentioned in section 8.2 [page 24], a printer_ID chosen from the set {1, 11, 12, 13, 14} provokes a fatal error if NDO is not enabled in the client hardware.

10.2. Surprising results, an example

You might come to define a printer where all the elements seem to be correct, but where the results are unexpected.

Using the example illustrated in 24 [page 27], if you create and use the name **192.168.219:21#Lexmark T620 PS**, the output will go to the Lexmark T620 PCL6.

This is because the critical information is printer_ID 21, while the string Lexmark T620 PS is only informative.

Printer_ID 21 is hard-coded to use logical printer 1.

And logical printer 1 is user-configured to target the Lexmark T620 PCL6

Figure 23 Extract of NDO mappings in the hardware client - plus information on the printer involved.

Mapping of network destinations to IP addresses		**Printer**
Network Destination 3	192.168.130.48	Lexmark T620 PS
Network Destination4	192.168.130.120	Lexmark T620 PCL6

Figure 24 Extract of extended printer names

Output to Logical Printer ...	**This logical printer targets, for example:**	***Thin-Print* Printer_ID**	***ThinPrint* extended printer name (given the setup example in figure 9 [page 14]**
1	NetwDest 4	21	192.168.130.219:21#Lexmark T620 PCL6
5	NetwDest 3	25	192.168.130.219:25#Lexmark T620 PS
7	NetwDest 3	27	192.168.130.219:27#Lexmark T620 PS
8	NetwDest 4	28	192.168.130.219:28#Lexmark T620 PCL6

11. For further information

11.1. From ThinPrint GmbH

White papers can be downloaded from www.thinprint.com.

In particular, there is a *White paper on Intermate101 as a ThinPrint client gateway*, which covers all the basics of setting up both the client hardware and the ThinPrint server. It also provides additional examples of how to direct output.

The White paper applies not only to the Intermate101 (which has NDO as standard), but also to the Intermate100 and the LAN FS3, which can serve as client gateways, provided that a license key for NDO has been bought and activated.

11.2. From Intermate A/S

The manuals mentioned in section 1.2 [page 4] can be downloaded from www.intermate.com. If you are presented with a choice of geographical locations, choose Europe. Then choose Support. Finally, choose the product web-site for the product you are using:

- LAN FS/3 (K92-based)
- Intermate 100/ Intermate101 (G22- and G32-based).