.print Client Linux

(Version 1.6.53)

Manual

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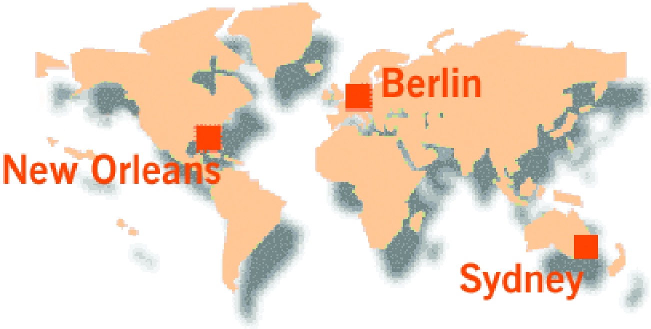

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Contents

.print Clients and supported features

.print Client + possible – not possible	Network protocol									.print Connection Service		
	ICA	TCP/IP	RDP	.print AutoConnect	Compression and streaming	Bandwidth control	Output Gateway	.print Viewture	Virtual Channel Gateway	Dynamic mode	Static mode	.print Connected Client Gateway
Windows (TCP/IP)[a]	–	+	–	+	+	+	+	+	–	–	+	+
Windows (ICA)	+	–	–	+	+	+	+	+	+	–	–	–
Windows (RDP)[b]	–	–	+	+	+	+	+	+	+	–	–	–
Service Windows (TCP/IP)[a]	–	+	–	+	+	+	+	–	–	–	+	+
ActiveX Windows (TCP/IP)[a]	–	+	–	+	+	+	+	+	–	+	–	–
Win16 (TCP/IP)[a]	–	+	–	+	+	+	–	–	–	–	–	–
Win OS/2 (TCP/IP)	–	+	–	+	+	+	–	–	–	–	–	–
DOS (TCP/IP)[a]	–	+	–	+	+	+	–	–	–	–	–	–
WinCE (TCP/IP)[a]	–	+	–	+	+	+	–	–	–	–	+[c]	+[c]
WinCE (ICA)	+	–	–	+	+	+	–	–	+	–	–	–
WinCE (RDP)[d]	–	–	+	+	+	+	–	–	+	–	–	–
PocketPC 2000 ... 2003 (TCP/IP)[a]	–	+	–	+	+	+	–	–	–	–	+[c]	–
PocketPC 2000 ... 2003 (ICA)	+	–	–	+	+	+	–	–	–	–	–	–
PocketPC 2003 (RDP)	–	–	+	+	+	+	–	–	–	–	–	–
Smartphone 2002 (TCP/IP)[a], e. g. Orange SPV	–	+	–	+	+	+	–	–	–	–	+[c]	–
ActiveX PocketPC 2000 ... 2003 (TCP/IP)[a]	–	+	–	+	+	+	–	–	–	+	–	–
Linux (TCP/IP)[a]	–	+	–	+	+	+	–	–	–	–	+[c]	+[c]
Solaris (TCP/IP)[a]	–	+	–	+	+	+	–	–	–	–	+[c]	+[c]
Symbian Nokia Series 60 (TCP/IP)[a], e. g. Nokia 3650/6600/7650, Samsung D700, Siemens SX1	–	+	–	–	+	+	–	–	–	+	+[c]	–
Symbian Nokia Series 80 (TCP/IP)[a], e. g. Nokia 92xx	–	+	–	–	+	+	–	–	–	+	+[c]	–
Symbian UIQ (TCP/IP)[a], e. g. Motorola A920, Sony-Ericsson P800	–	+	–	–	+	+	–	–	–	+	+[c]	–
Java (TCP/IP)[a]	–	+	–	+	+	+	–	–	–	+	+	+
LPD device	–	+	–	–	+[e]	+	–	–	–	–	–	–

a also usable for ICA/RDP sessions, provided a TCP/IP connection exists between server and client
b RDP 5.0 required
c in preparation
d Windows CE 2003 required
e if a decompression filter can be installed

Installing .print Client Linux

The *.print Client Linux* enables Linux client machines to receive and decompress .print print jobs and forward them on to print devices. These print devices can either be installed on the local port (e. g., *lp1, lp2*) or addressed remotely over *lpr*. This extends web applications and terminal sessions[1] to include the following .print features:

- Connection specific bandwidth control for print data
- Print data compression
- Print data streaming (print data sent in a stream of 32 KB packets)

TCP/IP is used for print data transmission – regardless of the session protocol in use. Furthermore, the .print Client Linux supports the .print *AutoConnect* tool for automatically creating the client printers in a session. *Driver Free Printing* with *ThinPrint Output Gateway* is not supported.

Requirements

Before installing .print Client Linux, make sure your Linux machine is **network capable**.

[1] Microsoft Terminal Services or Citrix MetaFrame

Versions of .print Client Linux

The version of .print Client Linux to be used depends on the GNU compiler collection available on the client. To check this, enter:

– gcc -v

.print Client file	**Type**	**.print Client version starting gcc 2.95.3**	**.print Client version starting gcc 3.2**
tnuclnt	dynamic	1.6.42.3[a]	1.6.42.1[b]
thnuclnt_static	static	1.6.42.4	1.6.42.2

[a] required libraries: libc.so.6, ld-linux.so.2 with link to ld-2.2.2.so

[b] required libraries: libc.so.6, ld-linux.so.2 with link to ld-2.2.5.so

Preparations

Server-side

Server Engine Terminal Services

A plug-and-play installation runs the first time .print Server Engine Terminal Services is installed, so that .print Clients Win32 can print without any further configuration. For .print Clients Linux, though, a few settings must be made after installation.

Templates for .print AutoConnect

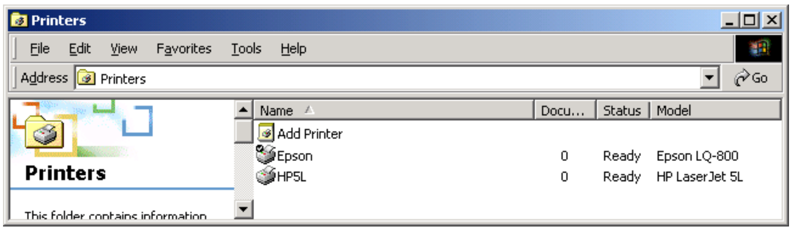
Templates are printer objects in the server's Printers folder from which session printers inherit their properties (e. g., bandwidth, network protocol, and printer driver).

_#ThinPrint Output Gateway

appears in the server's Printers folder after plug-and-play installation. This template cannot be used for .print Clients Linux. Instead, other printers[2] must be installed on the server for the print devices found on the client side.

[2] with native printer drivers

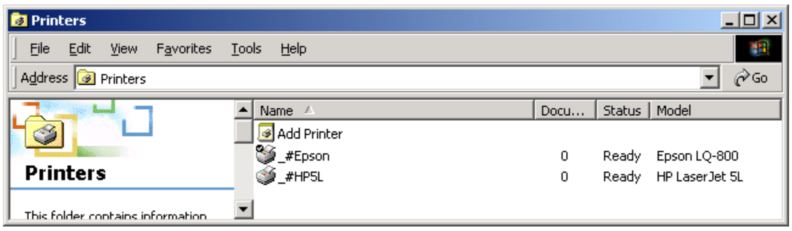
- Open the Printers folder on the server and install the necessary printer, either a separate printer driver for each type of client printer, or a universal driver for all client printers (or a combination of both). All of these printers must be connected to a ThinPrint TCP/IP port. An example of one printer object for all HP compatible print devices and one for all Epson compatibles is shown in Illus. 1.



Name	Docu...	Status	Model
Add Printer			
Epson	0	Ready	Epson LQ-800
HP5L	0	Ready	HP LaserJet 5L

Illus. 1 Installing universal printers on the server (example)

- Change these printer objects into templates by placing a **_#** in front of each printer name, deleting the permissions for all users except ADMINISTRATOR, and adding SYSTEM with *full access*. The result is shown in Illus. 2.



Name	Docu...	Status	Model
Add Printer			
_#Epson	0	Ready	Epson LQ-800
_#HP5L	0	Ready	HP LaserJet 5L

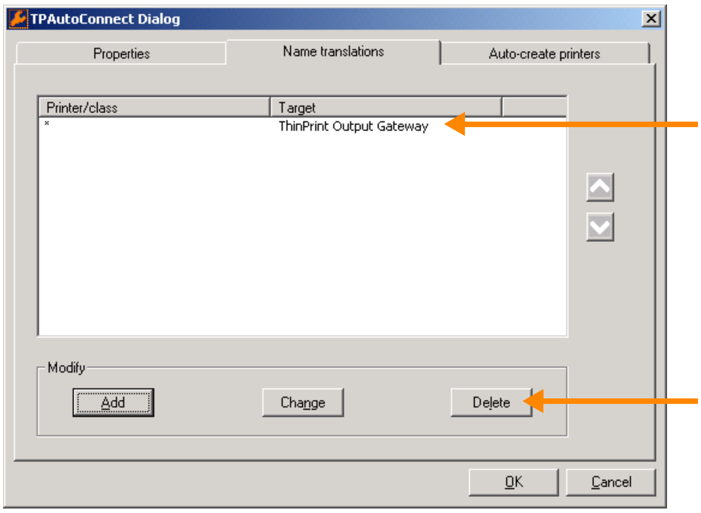
Illus. 2 Changing printer objects into templates (example)

.print AutoConnect

The ThinPrint tool AutoConnect is also installed during plug-and-play installation. The following entries are also automatically made in the AutoConnect name translation table (Illus. 3):

*	ThinPrint Output Gateway

- This entry has to be deleted, because ThinPrint Output Gateway cannot be used under Linux.



Printer/class	Target
*	ThinPrint Output Gateway

Illus. 3 Name translation table in AutoConnect: Delete all entries

Without AutoConnect

The client printer can also be created on the server manually. .print printer object name is composed as follows:

Names of printer objects

either:	*clientname*:*printer_ID*#*printer*
Example:	client1:3#Kyocera FS-850
or:	*IPaddress*:*printer_ID*#*printer*
Example:	191.168.1.17:3#Kyocera FS-850
or:	*printer*#*clientname*:*printer_ID*
Example:	Kyocera FS-850#client1:3
or:	*printer*#*IPadress*:*printer_ID*
Example:	Kyocera FS-850#191.168.1.17:3

The *Printer ID* is assigned by the .print Client Linux (see Example 1, Page 11).

Printer ID and **:** can also be omitted; then the *default printer* at the client will be targeted (see Example 1).

Client-side

Operating conditions

The following permissions should be granted on the Linux machine:

Location	Permission
Directory /tmp/.thinprint	• Full control for all
Config file /etc/thinprint.rc (see Page 13)	• Write permission for *root* • Read permission for *user*
.print Client program directory	• Read permission for *user* • Write permission for *admins*

Location	Permission
.print Client program file *thnuclnt*	• Execute permission for user

Installing .print Client Linux

Install .print Client as follows:

1. Start Linux, and log on as *root*.
2. Paste the line

   ```
   thinprint→ 4000/tcp
   ```

   into the file *etc/services*. At least one tab space (→) separates `thinprint` and `4000/tcp`. The 4000 indicates the TCP port number which the .print Client uses.[3]
3. Create the directory

   `/tmp/.thinprint` and grant it *full control* (777).

4. Copy .print Client Linux program file “thnuclnt” into a directory to which all users have read access.
5. Change this file’s right as follows:

   ```
   chown root:lp thnuclnt
   chmod 6777 thuclnt
   ```

6. Start .print Client (s. Chapters *Configuration 1: Via command line* and *Configuration 2: Via configuration file*).

Closing .print Client Linux

ThinPrint Client closes automatically at user logoff. There are two ways to close .print Client before logging off:

Command line

```
kill -15 process_ID
```

or

```
killall thnuclnt
```

Finding out the process ID:

```
ps ax | grep thnuclnt
```

[3] Be sure that the port number is the same on both .print Client and .print Server/Desktop Engine. Otherwise, communication between the two .print components is impossible. The default port number is 4000.

Configuring .print Client Linux

Configuration 1: Via command line

.print Client Linux has no special configuration menu. Almost all settings are configured over the command line as parameters when running the Client.[4] The following is a description of the individual parameters. .print Client can be run with or without printer class support.

Program execution

Run:

```
# ./thnuclnt [-h] [-v] [-q] [-s sleeptime,waitattempts] \
[-b bandwidth] [-p packetsize]
[-dev device [-class classname] -name printername]
```

Parameters

-h	Help	Displays available parameters and their function.
-v	Version	Displays current version of .print Client.
-q	Quiet	Messages are not sent. Only the message “ThinPrint Daemon started” is shown.
-s	Sleeptime	Maximum waiting period until next attempt to print in case of blocked printer, in seconds; default: **165**
	Waitattempts	The maximum number of attempts to print; Default: **100**
	Sleeptime and Waitattempts specify the amount of time a print job waits in the queue while a (connection to the) printer is being opened.	
-b	Bandwidth	You can enter a bandwidth value which is the same or smaller than that set in .print Engine. If the value is larger or if client control is disabled at the server, server settings are applied. No input or 0 (zero) means that the .print Engine value will be applied; default: **0** (corresponds to server setting; server default: 256 000 bit/s)
-p	Packet size	Size of packets for streaming, in Bytes; default: **0** (corresponds to server setting; server default: 32768 Bytes – only needs to be changed for the smallest end devices, like mobile telephones)

[4] See the variable *MAXKEEPALIVES*, Page 16.

-dev	Device	Print device path. Enter the print device to which .print Client sends the reconstructed print job. Theoretically, all devices listed in the /**dev** directory can be used. Examples: `-dev /dev/lp0` (= default setting for a Linux device on LPT1) `-dev hplaser` (= definition of an lpd device)
-class	Class	Printer class name for AutoConnect (optional; maximum length: 7 characters; without spaces)
-name	Printer name	Printer name for AutoConnect

Tip! *-dev, -class*, and *-name* must always be used together and in this order. Only printer class may be omitted.

Examples

.print ***without*** *AutoConnect*

The following example shows the command to open .print Client without ThinPrint AutoConnect; in other words, only printer objects previously manually created on the server can be used on the server during a session. The parameters **-dev** and **-name** must be used. The parameter

-name without entering a printer name has the effect that AutoConnect does *not* identify/install this printer.

The first printer entered in the parameter list is both the *default printer* [5] in .print Client and the default printer in the session if AutoConnect is used.

[5] Print jobs are produced over the “default printer” if the printer ID can’t be determined (e.g., no ID is given in the server-side printer name).

Example 1 (without AutoConnect):

Enter:

```
# ./thnuclnt -dev /dev/lp2 -name \
-dev /dev/lp1 -name
```

The following is displayed on the monitor:

```
Waiting period after an attempt to open the printer
12s
Maximum number of attempts 100

bandwidth 0 and package size 0

2 printers found

Printer ID: 1, Class: , Name: , Path: /dev/lp2
Printer ID: 2, Class: , Name: , Path: /dev/lp1
Default printer is Printer ID: -1
ThinPrint Deamon started
```

Note: In the example 1, bandwidth is 65535 bit/s.

.print ***with*** *AutoConnect*

It's also possible to select different printers with the parameter *-name*. AutoConnect will automatically create all selected printers on the server and connect them with a *ThinPrint Port* – provided templates exist (Page 5) and AutoConnect is running on the server (Autocreated Printers). For more info please refer to the .print Engine Manual Chapter ".print Autocreated Printer (ThinPrint AutoConnect)" or to the white paper ThinPrint AutoConnect.

Unix conventions generally apply when entering printer names (consult the relevant Linux manual). If a name contains a blank space, for instance, it is captioned in quotation marks "". For example, the name for *HP LaserJet 5L*:

```
-name "HP LaserJet 5L"
```

If the printer name contains quotation marks, a backslash is entered at the beginning. For example, the name for *HP "super" LaserJet 5L*:

```
-name "HP \"super\" LaserJet 5L"
```

Printer classes

It is also possible to set a printer class for each printer with the parameter **-class**. Entering a printer name is in any case obligatory – whereas assigning a class is optional.

Unlike printer names, class names may not be longer than 7 characters, and may not included blank spaces.

Example 2 (with AutoConnect):

Enter:

```
# ./thnuclnt -b 65535 -dev /dev/lp2 -name HP5L \
-dev /dev/lp1 -class Epson -name EpsonStylusColor720
```

The following is displayed on the monitor:

```
Waiting period after an attempt to open the printer 12s
Maximum number of attempts 100

bandwidth 65535 and package size 0

2 printers found

Printer ID: 1, Class: , Name: HP5L, Path: /dev/lp2
Printer ID: 2, Class: Epson, Name: EpsonStylusColor720,
Path: /dev/lp1
Default printer is Printer ID: 1

There are 2 correctly configured printers which are:
        PrinterID 1
        PrinterID 2
ThinPrint Deamon started
```

Note: In Example 2 ThinPrint AutoConnect attempts to connect the printers *HP5L* and *EpsoStylusColor720*. If this attempt fails, AutoConnect tries to connect to a class. Because in this case only one class is entered, only *EpsoStylusColor720* can be connected over the class *Epson*.

The session printer objects resulting from Example 2 are shown in Illus. 4[6]. The printer object

```
client1:1#HP5L
```

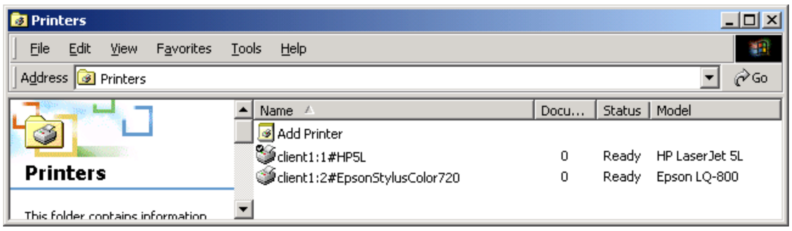
is generated according to its printer name (HP5L) with the template _#HP5L (Illus. 2) and therefore inherits the template's properties: bandwidth, TCP/IP protocol, HP LaserJet 5L printer driver. In contrast, the printer object

```
client1:2#EpsonStylusColor720
```

is generated according to its class name (Epson) with the template _#Epson (Illus. 2) and therefore inherits that template's properties: bandwidth, TCP/IP protocol, Epson LQ-800 printer driver (to generate the printer object

[6] Here, *client1* has been chosen as client name. Instead, the IP address could be used.

client2:2#EpsonStylusColor720 according to its printer name, a template _#EpsonStylusColor720 must exist on the server).


Printers
File Edit View Favorites Tools Help
Address Printers
Go
Printers
This folder contains information

Name	Docu...	Status	Model
Add Printer			
client1:1#HP5L	0	Ready	HP LaserJet 5L
client1:2#EpsonStylusColor720	0	Ready	Epson LQ-800

Illus. 4 Session printer objects created by AutoConnect as in Example 2

Configuration 2: Via configuration file

In addition to the command line, the file

/etc/thinprint.rc

is also automatically read in for configuration. Users require at least read access to this file.

Structure

It's not absolutely necessary that this file exist, because configuration can also be set over parameter input and default values (see above). It is nonetheless recommended to use this method of configuration when manual application is frequent. The file should be built with the following structure:

```
[PRINTERS]
    [*]device;[class];[MAXKEEPALIVES];name;
```

Printers must be entered with the form

```
    [*]device;[class];[MAXKEEPALIVES];name;
```

It's also important to ensure that these names are entered completely and correctly. Only class name may be omitted.

The printer that is marked with an asterisk * at the beginning of the line is both the *default printer* [7] and the default printer in the session (in case of several asterisks, the last one is applied).

[7] Print jobs are produced over the "default printer" if the printer ID can't be determined (e. g., no ID is given in the server-side printer name).

At the end of each line is semicolon ; followed by an ENTER. The individual statements are:

device	Print device path. Enter the print device to which .print Client Linux sends the reconstructed print job.
class	Printer class name for AutoConnect (optional; maximum length: 7 characters)
name	Printer name for AutoConnect
MAXKEEPALIVES	Waittime in the event of printer failure in minutes; job is cancelled thereafter; default: **10 minutes** per event
* (asterisk at the beginning of the line)	*Default printer* of the .print Client Linux and the default printer in the session
; (semicolon)	Divider

AutoConnect The description of how ThinPrint AutoConnect functions is also true for the configuration file (see Page 11).

Also in this case **class names** may not be longer than **7 characters**, and may **not** included **blank spaces**.

Example

Example 3 (with configuration file)

Configuration file:

```
[PRINTERS]
    /dev/lp1;HP5L;7;HPLaserJet5L;
    */dev/lp2;Epson;10;EpsonStylusColor720;
    /dev/lp3/;;;BJC2100;
```

Input over the command line:

```
    # ./thnuclnt -b 65535 -p 8192
```

The following is displayed on the monitor:

```
    Waiting period after an attempt to open the printer 12s
    Maximum number of attempts 100

    bandwidth 65535 and package size 8192

    3 printers found

    Printer ID: 1, Class: HP5L, Name: HPLaserJet5L, Path:
    /dev/lp1
    Printer ID: 2, Class: Epson, Name: EpsonStylusColor720,
    Path: /dev/lp2
    Printer ID: 3, Class: , Name: BJC2100, Path: /dev/lp3
    Default printer is Printer ID: 2

    There are 3 correctly configured printers which are:
            PrinterID 1
            PrinterID 2
            PrinterID 3
    ThinPrint Deamon started
```

lpd/lpr

Besides local printers (targeted over their device names /dev/lp...), printers can also be targeted over *lpd*. The **queue name** or one of the printer queue's **alias names** simply added from the file **/etc/printcap** instead of the device name. For example, a line from the configuration file **/etc/thinprint.rc**:

```
    HPLaserJet6L;HP5L;7;my_HPLaserJet6L;
```

Additional tips

- When the response *Correctly configured* appears after starting the .print Client, the printer has been given a name in the list of parameters or the configuration file. If a printer has no name, and this printer should be the *default printer*, the next possible printer becomes the *default printer*. If no other printer is possible or if no other (or absolutely no) printer has been marked as *default printer*, the printer **-1** is set as *default printer*.
- Waittime in the event of printer failure (*MAXKEEPALIVES*) can only be set from the configuration file.
- *Sleeptime* is the print job's wait time in the printer queue while attempting to open the printer. This is different than the variable *MAXKEEPALIVES*, which specifies the print job's wait time when the printer is blocked (paper jam, offline, etc.).
- If printers which are not connected (the device names do not exist) are to be added, they are given the suffix **/dev/null**. For example, if the device name /test does not exist:

```
Printer ID: 4, class: PCL, name: test, path: /dev/null
because wrong device name: /test
```