

Kofax Communication Server

IP Printer Manual

Version: 10.3.0

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The KOFAX logo is displayed in a bold, blue, sans-serif font. The letters are thick and closely spaced, with a clean, modern appearance.

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Chapter 1

Preface

The IP Printer is an application which logs in to a TCOSS server, takes messages out of a queue and prints them.

A cover sheet may be added to the document for printing. Message and cover sheet are printed as image, the optional footer line is printed as text.

There are four options how the print data is transported to the printer:

- Internet Printing Protocol
- Port 9100 Protocol
- File share
- Windows GDI print API

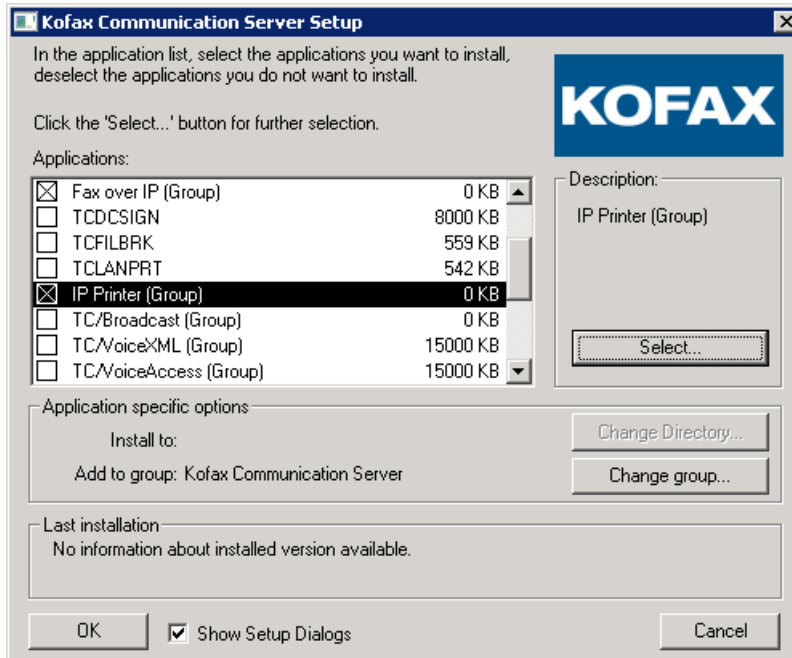
With the first three transport options, print data is sent in PCL5 format (HP printer control language).

The IP Printer operates in a way similar to a TC/Link. It uses a client/server channel and TCSI to access TCOSS. It does not require any special “printer channel” to be configured in TCOSS.

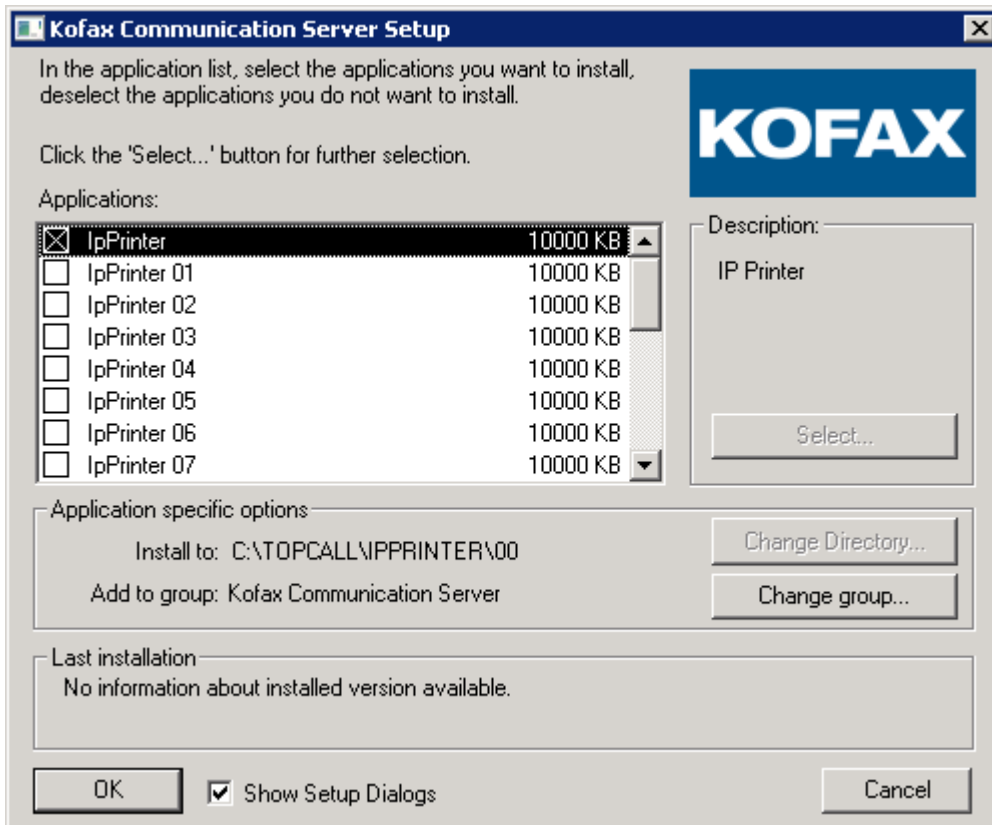
Chapter 2

Installation

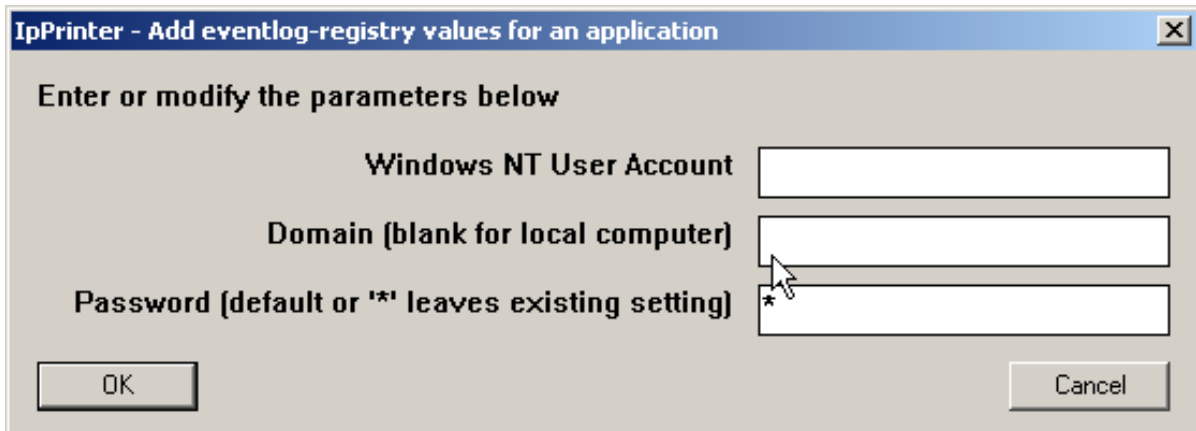
The IP Printer is installed as part of Kofax Communication Server:



1. Check the “IP Printer (Group)” options and click the “Select” button to get the window where specific instances can be selected.



2. Select **IpPrinter** if you want a single instance. For two instances, you can select **IpPrinter** and **IpPrinter 01**. It is also possible to choose **IpPrinter 01** and **IpPrinter 02** or any other combination of instances.



The IP Printer application is supervised by TCSR.V. There are the usual TCSR.V options, and if left blank, the IP Printer is started under the system account. If a Windows user is specified, it needs the right "Log on as a service" and must be a member of the local Administrators group.

3. Next in the installation process, the IP Printer configuration is started. To enter this configuration window if the IP Printer is already installed, run `Configure.bat` from the `C:\Topcall\IpPrinter`

\xx directory (xx = instance: 00, 01, etc.) or use the shortcut in the **Start > Kofax Communication Server** menu. Remote configuration is not supported.

General		
MessageServerPath *	LOCAL	Path to your TCOSS Server e.g. TCP/IP,MyServer LOCAL
TcCodepage	0	TCOSS system codepage, 0 = Western Europe, 1 = Eastern Europe, 932 = Japan, 65001 = Unicode 0
TcUserId *	TCPRINT	This TCOSS user ID defines the queue which is polled by the IP Printer TCPRINT
TcPassword		Password of user set above
transportDefault	[ipp] IP Printer	Default print data transport: ipp, tcp (port 9100 protocol), file (file share) or win (Windows print API) ipp
printerDefault		Default printer: IP address, host, UNC file share or printer name, depending on transport
Retry Behaviour		
timeoutDefault	0	Default overall timeout in seconds for doing print retries if printing fails, 0 = no timeout 0
TcPriorityChange	<input type="checkbox"/>	Check to decrease priority of print jobs that fail to print on first attempt false
retryDelay	0	Interval between send attempts. 0=use TCOSS default; 1..36 corresponds to values '1'..'T' in TCOSS config line 13; 1000+x defines a fixed interval of x seconds. 0
retryPattern2	0	Retry pattern value (0=TCOSS default), if print fails before connecting to printer (ec=R3, break=2) 0
retryPattern4	0	Retry pattern value (0=TCOSS default), if print fails after connecting to printer (ec=R7, break=4) 0
EndlessRetries	<input type="checkbox"/>	If it is checked, the retry sequence is restarted after the last attempt (of the last alternative number) failed. false
Layout		
coverDefault		Default cover message name (the cover is stored in the TCOSS FIS folder)
scaleDefault	95	Default printing scale in percent 95
formatDefault	[a4] ISO A4 (210x297mm)	Default page format: a4 or letter a4
footerDefault	\$ENam \$ scale: \$\$% created: \$	Default footer line, may include cover variables \$ENam \$...
IPP Protocol		
ippSchemeDefault	[ipp] port 631	Default url scheme/prefix for IPP mode. Scheme and port may be overruled by url in printer name ipp
SSL Config	[10.3] TLS 1.1-1.3; OWASP-C, FS (KCS 10.3)	Supported TLS protocols and cipher suites for IPP/TLS. (FS=forward secrecy, round bracket shows which version uses this configuration per default) 10.3
Port 9100 Protocol		
tcpPortDefault	9100	Default port number for port 9100 protocol 9100
Troubleshooting		
WebActive	<input type="checkbox"/>	Check to activate the administrative web server false
TcpPort	80	TCP/IP port of admin web server. If your computer already runs a web server on port 80 you have to change the port. 80
MessageTraceSize	1	Message size limit in bytes to trace traffic between components 1
TraceLevel	10	General trace level, (0..255) 0 = off, higher values give a more detailed trace 10
TraceFileSize	2000	Maximum size of trace files in kBytes 2000
TraceFiles	10	Maximum number of generated trace files 10
AppendTrace	<input type="checkbox"/>	Check to append to existing traces after restart of application false
Keep Blobs	Delete ASAP (default)	Define how long binary-large-object files are kept (for troubleshooting) 0

Only the first three input fields (marked with a red asterisk) are mandatory. They define the TCOSS server and the queue polled on this server. A user profile with the same name and password has to be set up in TCOSS (see [TCOSS User Profile](#)).

The “TcPriorityChange” check box allows to reduce the priority of print jobs that fail to print on the first attempt, e.g. because the printer is out-of-order. If checked the priority is reduced once, by one step, from “High” to “Normal”, or from “Normal” to “Low”, for all print retries.

The “retryDelay” value can be used to overrule the default retry delay configured in the TCOSS activation channel. It can be used in two ways: as a direct replacement of ATAMCONFACCT line 13 (relying on the TCOSS formula to calculate the retry delay) or to specify the retry delay in seconds.

Values 1 - 36 correspond to configuration values ‘1’ - ‘T’ in line 13

Values ≥ 1000 delay in seconds, calculated as specified value minus 1000

Examples:

retryDelay	Minimum delay between send attempts
0	Select retry delay according to line 13 in +TECH/ATAMCONFACCTC
1	TAMCONF line 13 = '1' (0 - 7 minutes)
9	TAMCONF line 13 = '9' (1 - 64 minutes)
18	TAMCONF line 13 = 'B' (2 - 128 minutes)
1600	10 minutes

Values retryPattern2 and retryPattern4 may be used to define the new send status table which is otherwise taken from line 44 and 46 of file ATAMCONFACCTC. They have the form of a bit field of 9 bits where each bit stands for a character in the configuration line string. Bit 0 set stands for '0' on position 9 in the configuration string, bit 1 set for '1' on position 8, bit 2 set for '2' on position 7 and so on. If a bit is not set it stands for '-'.

Examples:

Configuration string	Binary value retry pattern	Decimal / configured retry pattern value
87654321-	111111110	510
-----1-	000000010	2
-----10	000000011	3
-----0	000000001	1

If the flag "EndlessRetries" is checked, all retries are restarted with the first send attempt (of the first alternative number) after all send attempts (of the last alternative number) failed. This option is

required if you want to support endless retries to alternative numbers. Note that this feature requires TCOSS version 7.94.19 (first released with KCS 10.0+FR3933) or newer version.

A number of default options may be configured for the IP Printer, e.g. a default cover. See chapter [Print Options](#) for more details.

For "SSL Config" (SSL security configuration), select the of the following:

- **[10.3] TLS 1.1-1.3; OWASP-C, FS:** Supports TLS 1.1, 1.2 and 1.3. Also, support OWASP Cipher String 'C' and forward secrecy. This is default configuration.
- **[10.2] TLS 1.0-1.3; HIGH:** Supports TLS 1.0, 1.1, and 1.2. This configuration (including cipher list) provides the behavior of KCS 10.2.0 as good as possible.
- **[Adv] Advanced settings from Create_Config.xslt:** This option is for advanced users or can be used for troubleshooting. The configuration is derived from the `AdvancedOpenSslConf` variable in `Create_Config.xslt`.

```
<xs:variable name="AdvancedOpenSslConf"> <!-- OpenSsl configured
  <OpenSsl>
    <ContextOptions>121634816</ContextOptions> <!-- 7400000:
    <CipherList>OWASP-C</CipherList>
    <Flags>0</Flags> <
  </OpenSsl>
</xs:variable>
```

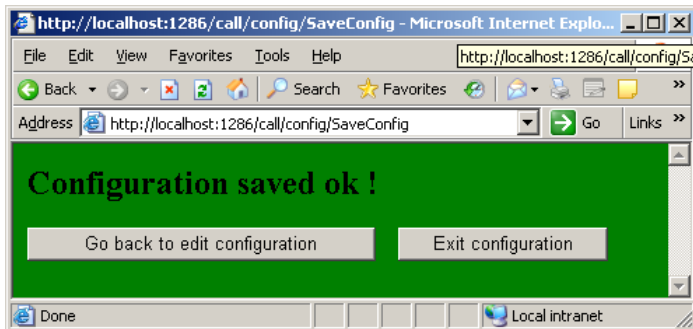
The "WebActive" check box and the "TcpPort" value allow an optional administrative web server to be included. The administrative web server has some useful testing and troubleshooting features, it is not required for the normal operation of the IP Printer.

When activating the administrative web server make sure to choose a port number which is not used by any other application. Multiple IP Printer instances have to be configured to use different port numbers.

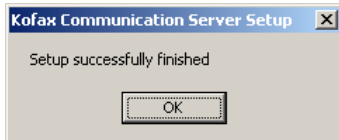
The next group of five input fields "MessageTraceSize", "TraceLevel", "TraceFileSize", "TraceFiles" and "AppendTrace" may be used to activate traces, see chapter [Traces](#).

The "KeepBlobs" value allows to keep binary-large-object files for troubleshooting. Set this value to 0 and change only on special advice.

4. Finish configuration by pressing “Save” and then “Exit Configuration”:



This message box concludes the IP Printer setup:



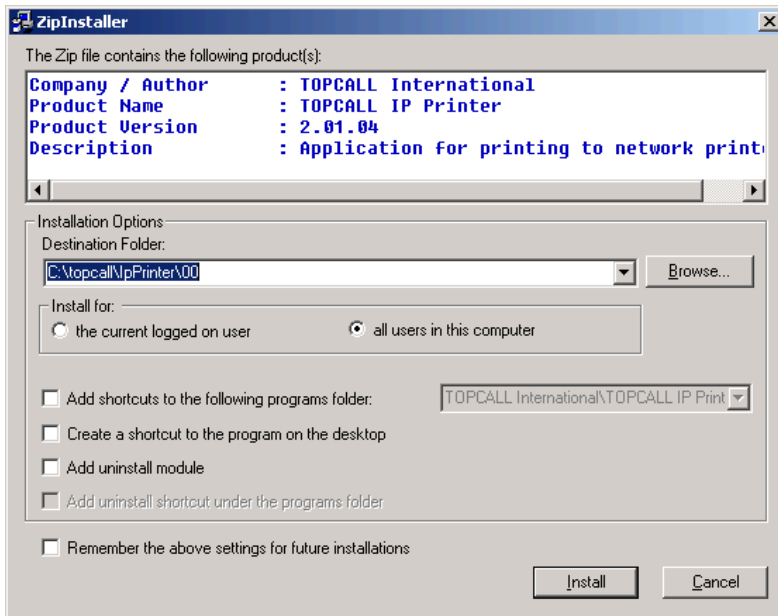
Installation of IP Printer Module Updates

You can update an existing installation either by installation of Kofax Communication Server setup or via an IP Printer Module Update (IpPrinter.exe). We recommend using the KCS setup for updates whenever possible. It behaves like an initial installation with the exception that the configuration dialog shows the current configuration values (instead of defaults).

In cases where only a module update is available, you must follow the steps described below:

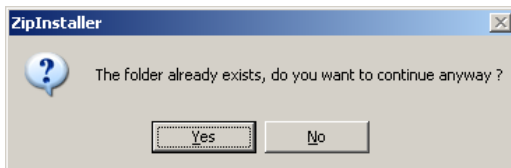
1. Stop the IP Printer.

2. Run the IpPrinter.exe. A window appears:



The default destination folder (C:\topcall\IpPrinter\00) is ok if you want to update the default instance. If you want to update any other instance, then the instance number ("00") has to be changed.

3. Click **Install** to copy the files. A warning will be displayed because the destination folder already exists.



4. Click **Yes** to continue. After copying the files, a confirmation message appears.
5. Run the file *configure.bat* from the destination folder. It will show the configuration dialog (as explained in the chapter [Installation](#)). Change the configuration if required or simply close the windows. *Configure.bat* will then update internal configuration files required by the new version.

TCOSS User Profile

A user profile that defines the printer queue has to be created in TCOSS. The User ID and password of this user have to match the values entered during the IP Printer setup.

Make sure to check the "Visible in outbox" option in the user profile's general settings.

The user needs Read rights in the System Folder (to retrieve print covers from the FIS folder) and Read rights in the System Address Book (to get an inbound fax recipient's full name, department, etc.). No other rights are required.

License

An IPPrinter license is required on the TCOSS server.

The license count model is per workstation, which is the number of workstations where an IP Printer is running is compared to the "maximum registrations" count granted by the license.

Chapter 3

Print Options

This section describes the printing options.

How to Specify Options

You can specify Print options in two places: In the number field of the print send order or in a separate text block starting with “++OPTIONS” at the beginning of the print cover. Note that the option names must be specified using lower-case characters. Unknown options (or options with the wrong case) are silently ignored without error messages.

In both cases, you can specify the options in the URL query syntax or in XML.

Example for options in URL query syntax in the number field:

```
..S,R=TF0027,N=IPQUEUE:cover=IPCOVERCVR&printer=10.1.1.12&duplex=1
```

An option in URL query syntax is specified in the form “name=value”, and multiple options are chained with an ampersand (&). It is allowed to put in an ampersand after the last option. Spaces in the value field may also be entered as ‘+’. Special characters, (such as &, =, + and %), must be replaced by “%xx” where xx is the hex code of the character, such as “%2B” for ‘+’.

Note Avoid using a backslash character ‘\’ in the number field options. The backslash separates alternate addresses. Encode it as “%5C” or substitute it with a forward slash (such as in a UNC file share name).

Example for options in XML in a “++OPTIONS” text block in the print cover:

```
++OPTIONS
<duplex>1</duplex>
<footer>File: $ENam_____ $ Subject: $ERef$ $tab100$ Page $c$ / $p$</footer>
```

The options in a “++OPTIONS” text block fill the entire block, and the end of the print options is the end of the text block. The “++OPTIONS” text block is optional. If used, it must be the first text block of the cover. This text block is removed from the print cover for the actual print view.

A “++OPTIONS” text block may only be used in a cover that is selected by specifying a “cover” option in the print send order or in the configured default cover. It is not supported in a cover that is already contained in the message to be printed.

Note Options in URL query syntax in a “++OPTIONS” text block have to be chained with an ampersand, even if specified on separate lines. Insert the & before the line feed. Also terminate the last option with & to exclude the following line feed from the option value.

Option Defaults

Default values for some options may be set in the configuration. Most options also have a hard-coded program default if they are not set anywhere.

If the same option is set in different places its value is determined in this order:

1. Options from the number field
2. Options from a “++OPTIONS” text block in the cover
3. Option default in the configuration
4. Hard-coded program default

Document Options

These printing options apply to the whole document.

Option	Description	Example(s)	Default
cover	Cover sheet for printing taken from the TCOSS FIS folder (TCOSS file name prefix “F”, TCOSS folder “+MAIL5V”)	cover=IPCOVERCVR	-
transport	Print data transport: ipp (internet printing protocol), tcp (port 9100 protocol), file (file share) or win (Windows print API)	transport=ipp	ipp
printer	Printer IP address, host, file share or printer name (depending on transport)	printer=10.1.1.12	-
ippscheme	IPP URL scheme if the scheme is not specified in option printer. The scheme defines the default port (if no port is specified in the URL) and the encryption mode. The following values are supported: ipp ... (port 631) http ... (port 80) ipps ... (port 631 with TLS) https ... (port 443 with TLS)	ippscheme=https	ipp
timeout	Timeout in seconds for doing print retries if printing fails, 0 = no timeout	timeout=900	0

Option	Description	Example(s)	Default
notifcontent	Content for printing of notifications: c ... sending copy d ... original document e ... empty cd ... sending copy if it exists, otherwise original document	notifcontent=d	cd
pages	maximum number of pages to be printed	pages=1	-
pagebreak	Leading page break of message: skip or leave	pagebreak=skip	leave
footer	Footer line, may include cover variables	footer= Page \$c\$ / \$p\$	-
exitstart	Optional data inserted before PCL job, may include cover variables	exitstart={ES}%-12345X	-
exitend	Optional data added after PCL job, may include cover variables.	exitend={ES}%-12345X	-

The print cover is taken from the TCOSS FIS folder. The TCOSS file name is constructed by adding the prefix "F" to the specified cover name, and the TCOSS folder is "+MAIL5V".

Example: The option "cover=IPCOVER" selects the TCOSS file "FIPCOVER" from the TCOSS folder "+MAIL5V".

If the "Save as cover sheet" option is selected in TCfW, when saving a cover sheet, the specified message name is padded with spaces to 7 characters and the 3 letters "CVR" are added to the message name. It is not required or recommended to use this option, but if you do so, make sure to enter the cover name correctly padded with spaces plus "CVR" in the cover option. The IP Printer does not automatically add the "CVR" postfix.

The "timeout" option allows to limit the time during which print retries are done if printing fails. The timeout is specified in seconds, and setting "timeout=0" means that the timeout supervision of print retries is inactive and that an unlimited number of retries may be done. See [Print Retries](#) for a detailed discussion of the retry handling.

See [Notification Printing](#) for a detailed description of the "notifcontent" option.

The "pagebreak=skip" option setting allows to skip the leading page break of the message (if there is any), so that the beginning of the message is printed on the cover page. It may be used in combination with the "pages=1" option to have cover information and the start of the message printed on a single page.

See [Exits](#) for a detailed description of the "exitstart" and "exitend" options.

Page Options

These printing options may be set differently for each page. To set an option for the first page use its name as described below, such as source=1. To set an option differently for the second or a later page, add a minus and the page number to the option name, such as source-2=3 to set the paper source to tray

3 for the second page (and all following pages). All options stay in effect until changed, so an option for the first page is valid for the whole document if it is not set differently for a later page.

Option	Description	Example	Default
format	page format: A4 or letter	format=letter	A4
scale	printing scale in percent (70 ..98), the maximum scale value depends on the page format and is 95 for a4 and 98 for letter	scale=92	95 / 98
duplex	simplex / duplex printing mode 0 ... simplex 1 ... duplex, long-edge binding 2 ... duplex, short-edge binding	duplex=1	-
output	output bin selection (printer-specific) 1 ... upper output bin 2 ... lower output bin	output=2	-
source	paper source (printer specific) 1 ... tray 1 (lower) 2 ... tray 2 (middle) 3 ... tray 3 (upper)	source=3	-
resolution	raster graphics resolution in dpi	resolution=600	300
first	first (top) position of image in decipoints	first=240	120
height	height reserved for footer line in decipoints (1/720")	height=120	72
xpos	X position of footer line in decipoints	xpos=120	432
yoff	Y offset of footer line from page end in decipoints (1/720")	yoff=180	139
spacing	footer line character spacing 0 ... fixed 1 ... proportional	spacing=1	0
pitch	footer line font pitch	pitch=16.67	16.67
point	footer line font point size (1 point = 1/72")	point=6	8.5
style	footer line font style 0 ... upright 1 ... italic	style=1	0
weight	footer line font weight (-7 ... +7) -3 ... light, 0 ... medium, 3 ... bold	weight=3	0
face	footer line font typeface 0 ... Line Printer, 4099 ... Courier 4148 ... Univers, 16602 ... Arial	face=4148	0

Some options, such as the paper source or output pin, resolution are printer specific. Please check your printer's PCL5 command summary for supported values. The option value is the variable part of the applicable PCL5 command, in most cases consisting of one or more ASCII digits. The value range is not limited to the values described above.

Support of all footer line font options (face, style, spacing, weight, pitch and point) depends on fonts available in the printer. Font selection is made based on all parameters and according to best fit selection rules.

Print Options for Windows Print API

When printing through the Windows GDI print API (option 'transport=win') some options are not supported, and some options have a different value range or different defaults, as compared to printing through the other three transport options (ipp, tcp and file).

Options that are not supported:

- exitstart (optional data inserted before PCL job)
- exitend (optional data added after PCL job)
- output (output bin selection)

The meaning of the printer name option is described below:

- Local Printers can be accessed by the printer name as you see it in Control Panel | Printers. (such as "TOPCALL Fax")
- Local Printers that are shared can also be accessed by their share name. See Printer properties | Sharing (such as "MySharedPrinter")
- Network printers must be addressed by their UNC name (such as \\printerserver01\printer01). Since backslashes can't be entered into the TCOSS number field, all forward slashes '/' contained in the printer name field are converted into backslashes '\' so that UNC names such as "\\printerserver01/printer01" can be used.

Note that a Windows printer driver must be installed on the local machine also for printing on a network printer. You can use Control Panel -> Printers to get a list of all printers that may be used with this mode.

The format option (page format: A4 or letter) is a document option and can't be changed within a document.

The following options behave differently.

Option	Description	Example	Default
source	paper source tray (1,2,3,...) 1 ... upper 2 ... lower 3 ... middle 4 ... manual 5 ... envelope 6 ... manual 7 ... auto 8 ... tractor 9 ... small format 10 .. large format 11 .. large capacity 14 .. cassette 15 .. form source	source=3	-
first	first (top) position of image in decipoints	first=240	0
xpos	X position of footer line in decipoints	xpos=120	360
yoff	Y offset of footer line from printable page area end in decipoints (1/720")	yoff=180	0
pitch	footer line font pitch (10, 12, 16.67)	pitch=16.67	16.67
point	footer line font point size (1 point = 1/72"): 6, 6.5, 7, 7.5, 8, 8.5, 9, 10, 11, 12, 14	point=6	8.5
weight	footer line font weight (0 ... 1000) 0 ... don't care 100 ... thin 200 ... extra light 300 ... light 400 ... regular 500 ... medium 600 ... semi bold 700 ... bold 800 ... extra bold 900 ... ultra bold	weight=3	400

Option	Description	Example	Default
face	footer line font name	face=Arial	-

The difference in the positioning options defaults (first, xpos, yoff) is due to the fact that the Windows print API exposes the printable area of the paper only, while the PCL5 commands used with the other transport options (ipp, tcp and file) refer to the physical edges of the paper.

Auto-Scale Feature

The IP Printer has an "auto-scale to page size" feature. The specified or default scale is automatically reduced to fit oversized pages to the paper. The auto-scaling is done individually for each page.

Print Cover

A cover sheet for printing a message may be specified in the number parameter (see [Document Options](#)). It is also possible that the message already contains a cover.

All TCSI cover variables may be used in the print cover. Please check the TCSI manual for details. Here is a selection of TCSI cover variables useful in a print cover:

Variable	Child object	Description
\$ERef\$	TS_REF	Subject field of the message
\$ENam\$	TS_ENV_NAME_POSTED	Original message name
\$Docnr\$	TS_DOC_NR	Serial sending number 1)
\$Laction\$	TS_LAST_MDA_ACTION	Sending error code
\$Lnote\$	TS_LAST_MDA_NOTE	Last note of delivery agent
\$Cctr\$	TS_COST_CENTER	Cost center 2)
\$Cost\$	TS_COST	Cost of sending the message
\$UAdd1FAX\$	SET_ENTRY_RS_ORIGINATOR	Originator address service "FAX"
\$Add1FXI\$	SET_ENTRY_RS	Recipient address service "FXI"
\$SNam\$	TS_RECIP_ID	Recipient short name

1. From the document-page number field, set only in incoming and outgoing faxes.
2. The cost center is taken from the originator user profile if the print send order is created by an event.

The following 18 new cover variables have been implemented for the IP Printer project in TCSI version 2.58.00; all of them access fields of the mail entry.

Variable	Child object	Description
\$CTime1\$	TIME_CREATED	File creation time
\$CDate1\$	TIME_CREATED	File creation date

Variable	Child object	Description
\$RTime1\$	TIME_REC_END	End of reception time
\$RDate1\$	TIME_REC_END	End of reception date
\$ITime1\$	TIME_INTENDED	Intended sending time
\$IDate1\$	TIME_INTENDED	Intended sending date
\$FNam\$	TS_FILE_NAME	File name
\$MsgId\$	TS_TC_MSG_ID	TC message Id
\$LocAdd\$	TS_LOCALIZED_ADDR	Localized Address
\$RcInfOr\$	TS_REC_INFO_ORIG	Originally specified recipient info
\$RcInf\$	TS_RECIPIENT_INFO	Recipient info
\$OrInf\$	TS_ORIGINATOR_INFO	Originator info
\$SDur\$	TS_DURATION	Sending duration
\$SChan\$	TS_CHANNEL	Sending channel
\$SMedia\$	TS_SERV_ID	Sending media server
\$SError1\$, \$SError2\$	TS_LAST_MDA_ACTION	Sending error text from language file
\$RCode\$	TS_DOCUMENT_ERR	Reception error code
\$RError1\$, \$RError2\$	TS_DOCUMENT_ERR	Reception error text from language file

All date and time variables have format options 0, 1 and 2 analogous to the existing \$Date\$ and \$Time\$ variables used in the form \$Date1\$, \$Date2\$ etc. (0=extended format with format string, 1=YY-MM-DD and hh:mm:ss, 2= DD-OCT-YYYY; hh:mm:ss).

The two error text variables allow selecting the language by specifying 1 for English or 2 for German. The error text strings are taken from the language files tc01.err and tc02.err which are expected to exist in the TOPCALL Shared directory, usually "C:\TOPCALL\SHARED". If the error string lookup fails, such as because the appropriate language file is not found, the two byte error code is inserted instead.

Sample covers (both plain text and RTF) can be found in Hint #12443 in the "Errors, Enhancements, Hints" database.

The "++OPTIONS" text block of the print cover options support all the TCSI Cover variables.

Example below demonstrates how the cover variables in the ++OPTIONS are resolved.

```
++OPTIONS
```

```
<duplex>1</duplex>
```

```
<footer resolve="0">File: $ENam_____ $ Subject3: $ERef$ $tab100$ Page $c$ / $p$</footer>
```

```
<exitstart resolve="1">{ES}%-12345X@PJL$ERef$
```

```
@PJL JOB
```

```

@PJL SET PRINTQUALITY=LOW
@PJL SET MANUALFEED=OFF
@PJL SET OUTBIN=UPPER
@PJL SET USERNAME=$ERef$
@PJL SET FINISH=NONE
@PJL SET PAGEPROTECT=AUTO
@PJL SET HOLD=OFF
@PJL COMMENT SET COPIES=2
@PJL ENTER LANGUAGE=PCL

</exitstart>

<exitend resolve="1">{ES}%-12345X $ERef$ @PJL EOJ{CR}{LF}{ES}%-12345X</exitend>
    
```

In the preceding example, the footer is not resolved as the resolve attribute of footer section is set to “0”. The cover variables in ‘exitstart’/‘exitend’ sections are resolved as the ‘resolve’ attribute is set to “1”.

The table below explains the behavior of resolution of cover variables in “++OPTIONS” text block of print cover.

Use case	Behavior
No resolve attribute	Cover variables are not resolved. But by default the cover variables footer are resolved
resolve="0"	No cover variables are resolved
resolve="1"	Cover variables are resolved.

Note It is not possible to use RTF cover sheets for text-only channels which do not support images (such as telex). This applies also to their delivery / non-delivery notifications. Only text cover sheets can be used.

Footer Line Cover Variables

In addition to all TCSI cover variables, the following variables may be used in a footer line.

Variable name	Description
\$c\$	current page number: 1, 2, 3, ...
\$p\$	total number of pages ¹

¹ The total number of pages includes the cover and the complete document. It is not affected by the “pages” option which may be used to print e.g. only the first two pages. If one prints two pages of a ten pages long document the “\$p\$” variable still shows “10”.

Variable name	Description
\$s\$	scale value in percent
\$tab77\$	tabulator, extends or clips the preceding footer line to the specified number of characters: in this example to 77.

Exits

The document option “exitstart” allows to insert data before the start of the actual PCL5 print data, the document option “exitend” allows to add data after the end of the PCL5 job. These options may be used to frame the PCL5 print data with PJL commands (HP Printer Job Language) or any other printer-specific commands.

The “exitstart” and “exitend” options will usually be specified in a “++OPTIONS” text block in the print cover using XML format. To allow convenient inclusion of control characters in the XML text content both exit options support the following notation.

Notation	Control name	Decimal value	Hex value
{ES}	Escape character	27	1B
{CR}	Carriage return	13	0D
{LF}	Line feed	10	0A
{xx}	Any code as 2 hexadecimal digits	-	xx

Example of ++OPTIONS text block in print cover:

```
++OPTIONS
<pagebreak>skip</pagebreak>
<duplex>1</duplex>
<exitstart>{ES}%-12345X@PJL
@PJL JOB
@PJL SET PRINTQUALITY=HIGH
@PJL SET MANUALFEED=OFF
@PJL SET OUTBIN=UPPER
@PJL SET FINISH=NONE
@PJL SET PAGEPROTECT=AUTO
@PJL SET HOLD=OFF
@PJL COMMENT SET COPIES=2
@PJL ENTER LANGUAGE=PCL
</exitstart>
<exitend>{ES}%-12345X@PJL EOJ{CR}{LF}{ES}%-12345X</exitend>
```

The preceding example shows how the exit options are used to encapsulate the PCL print data with PJL commands. The “exitend” option uses “{CR}{LF}” to specify a line break, while in the “exitstart” option line breaks are entered explicitly, to highlight the two possible ways. The escape character is specified as “{ES}”, it is also possible to use “{1B}”.

The Cover variable in the ‘exitstart’ and ‘exitend’ can resolved (see section 3.7).

Restriction

All switching between printer languages (like the UEL command “{ES}%-12345X” and the switch back to PCL with “@PJL ENTER LANGUAGE=PCL”) has to be done explicitly in the “exitstart” and “exitend”

option content. The IPPrinter process does not validate the specified content, nor does it add anything. Improper setting of these options may result in unusable printouts, with the print send order in TCOSS still being handled as “printed ok.”

Notification Printing

For printing notifications, all cover variables are resolved using the header of the original message and the original mail entry (and not the actual notification mail entry and the back-reception document header).

The content printed after the print cover is controlled by the “notifcontent” option:

notifcontent	Content printed
c	Sending copy (also referred to as back-reception content)
d	Original document (without original cover)
e	Empty (no content, just the print cover)

The original document is printed without its original message cover, because a second cover (after the print cover) would add little or no extra information and make the notification printout longer and more difficult to understand.

The “notifcontent” option also supports combinations of 2 characters. The first option character specifies the print content for the case that a sending copy exists. The second option character applies if there is no sending copy. Examples:

notifcontent	Content printed
cd	Sending copy if available; otherwise original document (default value)
ed	Empty if sending copy exists; otherwise original document

The default behavior is like “notifcontent=cd” were specified. In other words, the sending copy is printed if available; otherwise, the original document is taken.

Tip The notification content may be set differently for delivery and non-delivery notifications by using separate print covers and specifying the "notifcontent" option in a "++OPTIONS" text block within the print cover.

Chapter 4

Operation

This section describes the operation of IP Printer.

Poll Interval

While the IP Printer is idle, the configured print queue is polled with an interval of 10 seconds. After a message has been printed, the next query of the print queue is done immediately. If printing fails, the queue is polled again after an error delay of 5 seconds.

Print Response

If printing of a message succeeds the response field of the print send order is set according to the selected transport option.

Response Examples:

“printed at ipp://10.1.1.12/ipp/port1/job-0149” (Internet Printing Protocol)

”printed via port 9100 protocol at 10.1.1.12“

“printed at file share //dc1/ HPLJ5100DTNPCL6”

Note on printing to a file share: The print data is buffered by a spooler on the print server and printing succeeds even if the printer is in an error condition. In this case, the printing is done later when the printer becomes operational again. If the print server fails in the meantime, the data is lost and never printed.

About IPP Printer Addressing

An IPP printer requires a valid url. Here is a typical example that is supported by most printers:

```
http://{printer-ip}:631/ipp (equivalent to ipp://{printer-ip}/ipp)
```

Printer URLs are supported very similar to url's in the Web browser so that the scheme defines the encryption (TLS) mode and the default port as shown in the table below.

URL Scheme	Encryption (TLS)	Default Port
ipp	No	631
http	No	80
ipps	Yes	631
https	Yes	443

Notes:

1. The default port according to the scheme is used if port is specified in the URL host part.
2. There is no difference between ipp and http (and between ipp and ipps) except the default ports. For example, the following URLs are equivalent:
`http://1.2.3.4:631/ipp == ipp://1.2.3.4/ipp == ipp://1.2.3.4:631/ipp`
3. The subfolder "/ipp" (or "/printer") may be required, depending on the printer model.
4. The IPP Test client function "Get Printer Attributes" can be used to get a list of all supported printer URLs as shown below.

Welcome to KCS IP Printer

5. The URL scheme will be taken from the print option "ippscheme" if the option "printer" does not start with a URL scheme (ipp://, http://, ipps:// or https://). The fallback for both options is defined in the configuration.

Here are some examples (transport option "ipp" is assumed in all cases).

Print options		Configuration values		Used url
printer	ippscheme	printerDefault	ippSchemeDefault	
http://printer:631/ipp	{don't care}	{don't care}	{don't care}	http://printer:631/ipp
printer:631/ipp	http	{don't care}	{don't care}	http://printer:631/ipp
printer/ipp	{not defined}	{don't care}	ipp	ipp://printer/ipp
{not defined}	https	printer/ipp	{don't care}	https://printer/ipp

Secure printing with IPP

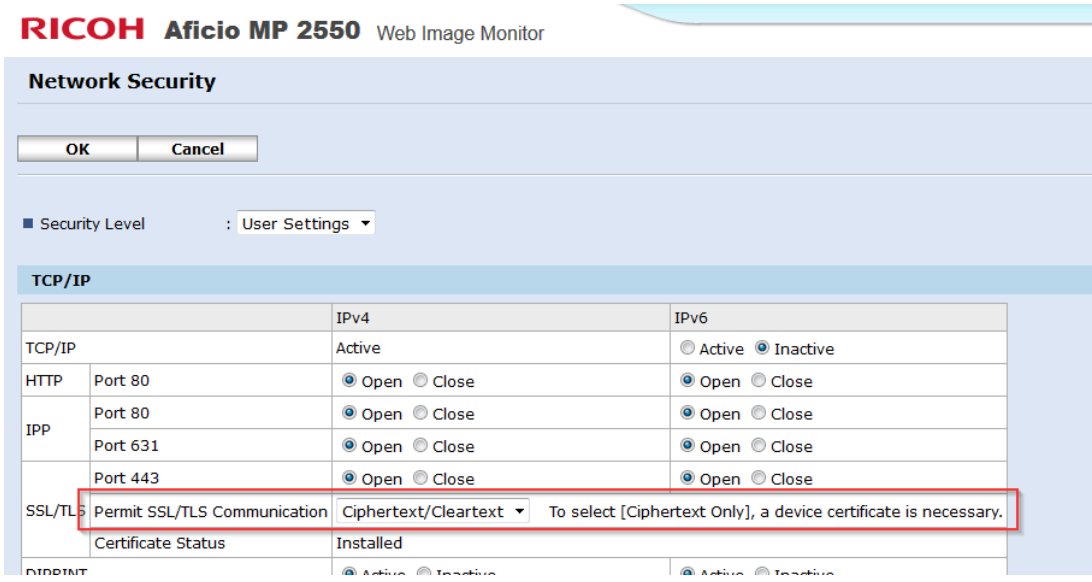
All print data is encrypted by TLS with OpenSsl in the following case:

- The URL scheme is ipps or https

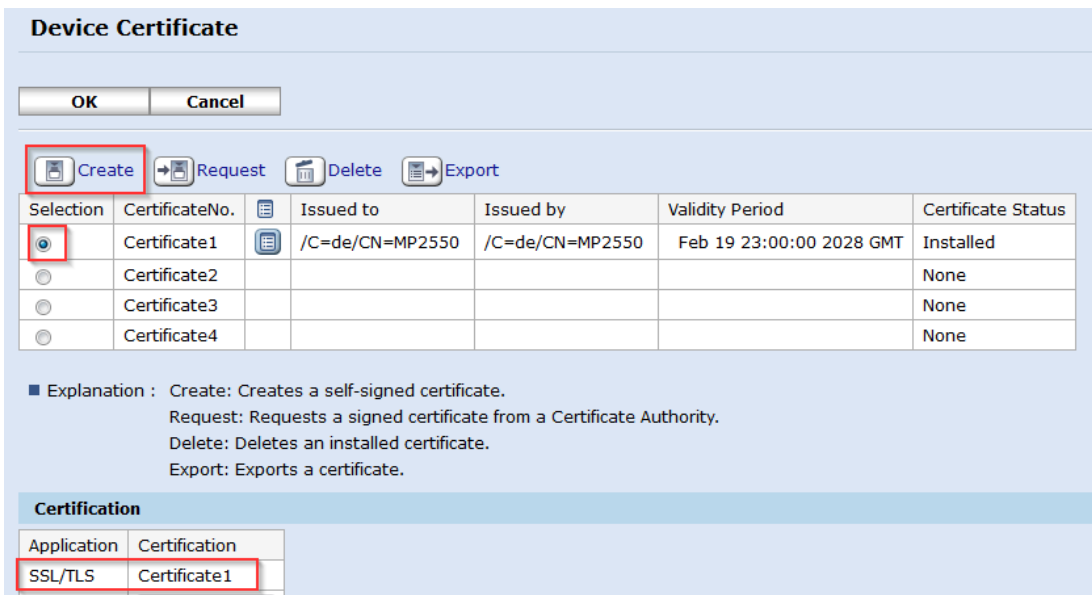
- TLS is configured/enabled by the printer.

The second requirement is usually not available with the factory settings. Here are some tips on how to enable TLS with Ricoh Aficio MP 2550 with a self-signed certificate:

- Open the printer web portal as an administrator.
- Open page configuration -> Network Security and set SSL/TLS mode to “Ciphertext/Cleartext”. Otherwise, access to the web portal may be disabled after installation of the certificate and your browser may not allow https with the printer.



- Open page configuration -> Device Certificate and generate a certificate for SSL/TLS



Please refer to your printer documentation for further tips.

Print Failure

A print attempt which fails before any print data is sent to the printer, or which fails for any reason if printing via file share, is signaled by the sending error code R3 (“Can’t print”) in the print send order. All other print failures get error code R7 (“break while printing”).

The response field holds a more detailed failure description.

Print failure response examples:

“Internet Printing Protocol Fault“

”Fault connect to “10.1.1.100” failed, socket error 10060”

”Fault http status code 501”

For a list of HTTP status codes and socket errors, see the [Appendix](#).

Timeouts for IPP and Port 9100 Protocol

For the Internet Printing Protocol and Port 9100 Protocol transport options, the IP Printer employs a fixed timeout of 5 minutes in waiting for a response. It may happen that a printer fails to respond within 5 minutes but still accepts the print data and prints it later. In this case, the IP Printer does a retry and the document is printed twice.

The overall timeout of the printing procedure is 25 minutes, from connecting to the printer, sending the print data, until the reception of the printer’s response.

Print Retries

If an attempt to print a message fails, retries are done. Depending on when the print attempt failed, the print send order is rescheduled according to this table.

Fails when	Break	Error	Retries with standard configuration
Before any print data is transferred, or when accessing a file share	‘2’	“R3” can’t print	8 retries with increasing delays of 1, 4, 9, 16, 25, 36, 49 and 64 minutes. Further infinite retries have a fixed delay of 64 minutes.
After transfer of print data started via IPP or port 9100 protocol	‘4’	“R7” break while printing	Single retry after 64 minutes.

The print retries are controlled by the configuration of the TCOSS activation process in the file ATAMCONFAC.TC. The detailed description of the relevant config positions is available in the TCOSS system manual.

If the IP Printer is shut down while processing a message, the print send order in TCOSS stays in the Sending state for 30 minutes. Then the send order is returned into the print queue without any further delay and without decreasing the retry count.

Additional retry options (without changes to ATAMCONFACTC) can be specified in the IpPrinter Configuration. These values are described in the [Installation](#) chapter. Here are some typical examples.

IpPrinter configuration				Description
retryDelay	retryPattern2	retryPattern4	EndlessRetries	
0	0	0	no	Use the retry behavior according to ATAMCONFACT as described above.
1030	0	0	0	Use retries according to ATAMCONFACTCC, but use a fixed delay of 30s.
9	510	3	no	Default retries according ATAMCONFACTC as described above.
1060	1	1	yes	Try all specified number without delay. Endless retry with all numbers after 60s delay.
1	129	129	yes	Make 2 attempts with each number and a delay of 1 min between these attempts. Retry with all number after a delay of 9 min.

Additional Notes:

- The retry delay is zero, if the next alternative number is selected.
- The retry delay is calculated as $\text{new-status}=0$, if the complete retry sequence is repeated due to endlessRetries option.
- If the retryPattern is a non-zero even value (or the retryPattern is zero and the 9th position in the corresponding ATAMCONFACTC line is a minus "-"), endless retries are made with the first alternate number. This means that both the EndlessRetry option and alternative numbers are ignored in that case.
- Consider the following bugs:
 - [Bug 572331](#): Outbox status changes to „Waiting“ after a new alternative number is selected.
 - [Bug 571965](#): Logging of all send attempts does not log all attempts with alternative numbers.

Timeout Supervision of Print Retries

Use the “timeout” option to limit the total amount of time spent performing print retries. The timeout is specified in seconds, and setting “timeout=0” means that the timeout supervision of print retries is inactive and that an unlimited number of retries may be done.

The timeout is checked after each failed attempt to print a message. The delay before the next retry is calculated (assuming standard TCOSS configuration; the optional retryDelay configuration value is also ignored) and added to the time already passed since the intended printing time. If this total amount is less than the specified timeout period, the next retry will be scheduled in TCOSS. Otherwise, the print send order is terminated immediately, so that the next alternative address within the send order is activated and

the message sent there. If no (further) alternative address exists, the print send order is set to the "inactive – problems" state.

“Possible Duplicate” Message Flag

The “possible duplicate” flag of the print send order is set with break code ‘4’ (printing failed after transfer of print data started), and also if the IP Printer process or TCOSS is shut down while printing.

The “possible duplicate” flag of the print send order may be displayed in the footer line using the cover variable “\$P\$”. Please note that for notification printing, the original mail entry is taken, including the original message’s “possible duplicate” flag. In this case, the “possible duplicate” flag of the print send order does not appear anywhere.

Chapter 5

Performance

The message throughput of the IP Printer depends on three factors:

1. TCOSS server speed (how fast messages and covers can be fetched)
2. CPU performance of the IP Printer workstation (for image and PCL5 conversion)
3. Printer speed (actual printing and print job acknowledge)

When testing without printer (printing to a “test.pcl” file), a throughput of 68 pages per minute was observed on a workstation with a single 2.8 GHz Intel Xeon CPU. The performance in this case was limited by the workstation’s CPU speed.

In a real-world scenario, printing on a Canon IR3320i MFP throughput figures of between 10 and 20 pages per minute were measured. In this case, the speed was limited by the printer.

All performance tests were done with completely filled image pages. Actual print data may not always fill the whole page and print somewhat faster.

Having two IP Printer instances printing to the same printer can increase throughput. Depending on the model, the printer may wait until some or all of the data is printed before acknowledging the print job. In the meantime, a second IP Printer instance can already fetch and pre-process the next message.

Process Priority

To avoid problems with other real-time critical applications, all IP Printer processes are running at “Below-Normal” priority. This means that only CPU time that is not required by normal (or higher) priority processes is consumed by IP Printers. Most application programs are running with normal priority by default.

Chapter 6

Tips for Specific Printer Models

This section provides additional information about using different printer models.

Canon

This section provides additional information about using Canon printer.

IPP Support

With Internet printing protocol transport, add the postfix “/ipp” to the printer host name or IP address for some Canon MFP models such as “iR 3170C” or “iR2270”.

Option examples:

```
transport=ipp&printer=10.20.20.32/ipp
```

```
transport=ipp&printer=mfpc3170/ipp
```

Paper Source Selection

Models **GP 200E iR 330/400 iR550/600**:

Paper source	Source option value
Auto select	7
Drawer 1	8
Drawer 2	4
Drawer 3	5
Drawer 4	20
Drawer 5	21
Drawer 6	22
Side Paper Deck	23
Envelope Feeder	6
Manual Envelope Feed	3
Manual Feed / Stack Bypass	2

Paper source	Source option value
Main Paper Source (as defined in printer setup)	1

Models **GP 30/55/200F**:

Paper source	Source option value
Auto select	39
Drawer 1	1
Drawer 2	4
Drawer 3	33
Drawer 4	34
Drawer 5	35
Drawer 6	36
Side Paper Deck	5
Envelope Feeder	6
Manual Envelope Feed	3
Manual Feed / Stack Bypass	2

HP

This section provides additional information about using HP printer.

Paper Source Selection

Model **LaserJet 5100**:

Paper source	Source option value
Tray 2	1
Manual feed, paper	2
Manual feed, envelope	3
Tray 1	4
Tray 3	5
Auto select	7
Tray 4	20

Output Bin Selection

Model **LaserJet 5Si**:

Paper destination	Output option value
Top Output Bin	1
Left Output Bin	2
Left Bin Face Up	3
Bin 1 Face Down	4
Bin 2 Face Down	5
Bin 3 Face Down	6
Bin 4 Face Down	7
Bin 5 Face Down	8
Bin 6 Face Down	9
Bin 7 Face Down	10
Bin 8 Face Down	11

Lexmark

This section provides additional information about using Lexmark printer.

Technical Reference Manuals which include PCL emulation can be found at <http://www.lexmark.com/publications/techref.html>.

Paper Source Selection

Models **Optra Color 45/1200/E310/E312/C710/M410/M412/T family:**

Paper source	Source option value
Tray 1 (Default)	1
Manual Paper Feed	2
Manual Envelope Feed	3
Tray 2	4
Tray 3	5
Optional Envelope Feeder	6
Auto select	7
Multipurpose Feeder	8
Tray 4	20
Tray 5	21

Output Bin Selection

Models **Optra Color 45/1200/E310/E312/C710/M410/M412/T family:**

Paper destination	Output option value
Standard Bin	1
Bin 1 <i>or</i> Rear Bin	2
Bin 1 <i>or</i> Rear Bin	3
Bin 2	4
Bin 3	5
Bin 4	6
Bin 5	7
Bin 6	8
Bin 7	9
Bin 8	10
Bin 9	11
Bin 10	12

Ricoh

This section provides additional information about using a Ricoh printer.

IPP Support

With internet printing protocol transport, add the postfix “/printer” to the printer host name or IP address for some Ricoh MFP models like the “Aficio 2035e”.

Option examples:

```
transport=ipp&printer=10.11.255.254/printer
```

```
transport=ipp&printer=ricoh2035/printer
```

Sharp

This section provides additional information about using Sharp printer.

Paper Source Selection

Model **AR-507**:

Paper source	Source option value
Auto select	7

Paper source	Source option value
Tray 1	1
Tray 2	4
Tray 3	5
Tray 4	20
Tray 5	21

DEVELOP

This section provides additional information about using a DEVELOP printer.

IPP Support

With internet printing protocol transport, add the postfix “/ipp” to the printer host name or IP address for some DEVELOP MFP models such as the “ineo+353”.

Option examples:

```
transport=ipp&printer=10.20.20.13/ipp
```

MFP Cost Center Support

Some DEVELOP MFP models like the “ineo+353” support a “cost center” feature. The print data has to be accompanied by an appropriate cost center and a password value; otherwise, the print job is not completed.

The cost center and password has to be specified in PJJL commands, which can be put into the “exitstart” option within a print cover.

Example of ++OPTIONS text block in print cover:

```
++OPTIONS
<exitstart>{ES}%-12345X@PJJL
@PJJL JOB
@PJJL SET KMCOETYPE=0
@PJJL SET KMSECTIONNAME="it"
@PJJL SET KMSECTIONKEY2="word"
@PJJL ENTER LANGUAGE=PCL
</exitstart>
<exitend>{ES}%-12345X@PJJL EOJ{CR}{LF}{ES}%-12345X</exitend>
```

The above print cover specifies the cost center as “it” and a password with the value “word”. The </exitstart> end tag is put in a separate line after the last PJJL command so that all PJJL commands are properly terminated with a line feed.

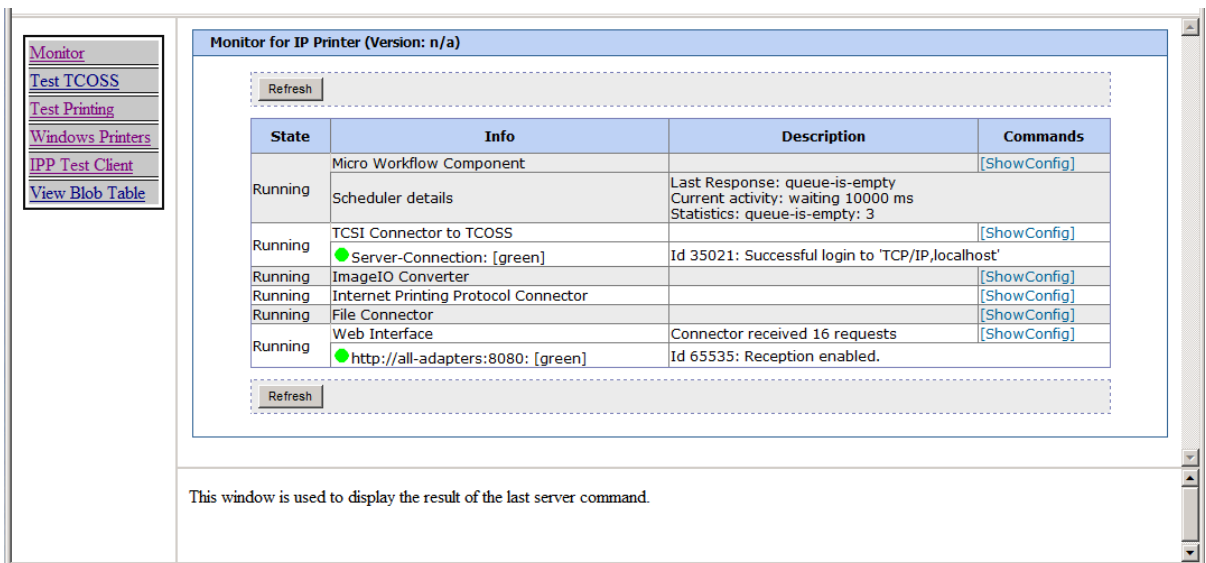
Note If the cost center feature is activated on a DEVELOP MFP and printing is attempted without cost center, or with a wrong cost center, or with a wrong password, the MFP will not print anything. But it accepts the print data and returns a “successful-ok” response on the IPP protocol level, just as if printing had succeeded. This means that the print send order on the Kofax Communication Server will be set to “sent ok” and there will be no indication that printing actually failed.

Chapter 7

Troubleshooting

Make sure that the administrative web server of the IP Printer application is active and remember the TCP port number you have set there (see [Installation](#)).

Start your favorite web browser and use a connection such as <http://localhost:80> to get this start page.



State	Info	Description	Commands
Running	Micro Workflow Component		[ShowConfig]
	Scheduler details	Last Response: queue-is-empty Current activity: waiting 10000 ms Statistics: queue-is-empty: 3	
Running	TCSI Connector to TCOSS		[ShowConfig]
	● Server-Connection: [green]	Id 35021: Successful login to 'TCP/IP,localhost'	
Running	ImageIO Converter		[ShowConfig]
Running	Internet Printing Protocol Connector		[ShowConfig]
Running	File Connector		[ShowConfig]
Running	Web Interface	Connector received 16 requests	[ShowConfig]
	● http://all-adapters:8080: [green]	Id 65535: Reception enabled.	

This window is used to display the result of the last server command.

The links in the left frame “Monitor”, “Test TCOSS”, “Test Printing”, “Windows Printers” and “IPP Test Client” select one of four sub-pages in the right frame. “Monitor” is selected by default.

The Monitor view shown above should display all six components as “Running”.

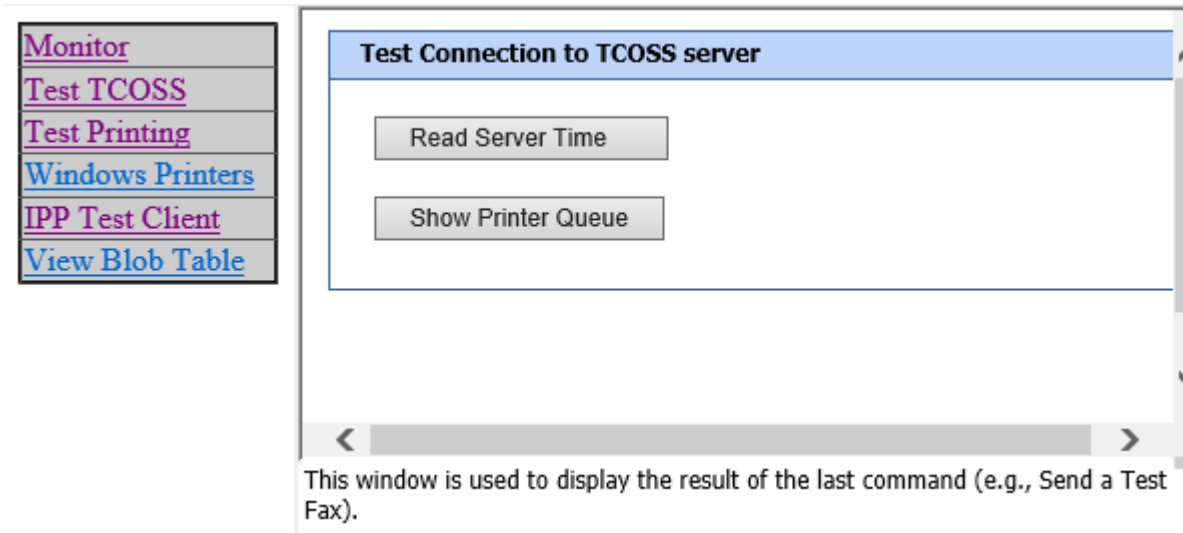
The “Last Response” in the “Scheduler Details” of the Micro Workflow Component displays one of these three results of the last attempt to print a message:

- “queue-is-empty”
- “printed-ok”
- “Fault”

The “queue-is-empty” response means the IP Printer is idle because there are no messages in its queue. The “Fault” response shown permanently probably means that the IP Printer cannot log in to TCOSS, because of a wrong path, user ID or password in its configuration, a missing license in TCOSS or because the TCOSS server is down.

The Fault counter in the statistics line is also increased if a print order is sent to a non-existent or wrong IP address.

Test TCOSS



This frame offers two buttons to test the TCOSS server connection: “Read Server Time” and “Show Printer Queue”. Both allow you to verify that the TCOSS server is running and that the server path, user id and password configured for the IP Printer are correct.

The “Read Server Time” button retrieves time of the TCOSS server and displays it without any style sheet, as shown above.

The “Show Printer Queue” button displays the number of messages in the printer queue (both total number and number of new messages) plus the first ten entries (if any) in the queue.

Test Printing

Test Printing	
transport	<input type="text" value="Default"/> print data transport protocol
printer	<input type="text" value="10.1.1.12"/> printer IP address, host, UNC file share or printer name or URL (depending on transport)
ippscheme	<input type="text" value="{Configured Default}"/> IPP url schema if the schema is not specified in option printer. The port number are defaults that can be overruled by [:port] in the printer url.
cover	<input type="text"/> cover message name (the cover is stored in the TCOSS FIS folder)
footer	<input type="text"/> footer line, may include cover variables
duplex	<input type="text" value="Default"/> simplex / duplex printing mode
pages	<input type="checkbox"/> check to print first page only
pagebreak	<input type="checkbox"/> check to skip leading page break of message (message starts on cover page)
format	<input type="text" value="Default"/> page format
scale	<input type="text"/> printing scale in percent, 70 ..100
resolution	<input type="text" value="Default"/> raster graphics resolution
output	<input type="text"/> output bin selection 1,2,3,.. (not supported by Windows print API)
source	<input type="text"/> paper source (1,2,3,..)
source-2	<input type="text"/> paper source for second page (and all following pages)
first	<input type="text"/> first (top) position of image in decipoints (1/720")
height	<input type="text"/> height reserved for footer line in decipoints, default is 72 (1/10")
xpos	<input type="text"/> X position of footer line in decipoints
yoff	<input type="text"/> Y offset of footer line from page end in decipoints
face	<input type="text"/> footer line font typeface (name for Windows print API, font number for PCL5)
style	<input type="text" value="Default"/> footer line font style
weight	<input type="text"/> footer line font weight (0 ..1000 for Windows print API, -7 ..7 for PCL5)
spacing	<input type="text" value="Default"/> footer line character spacing
pitch	<input type="text"/> footer line font pitch in characters per inch, default is 16.67
point	<input type="text"/> footer line font point size (1 point = 1/72"), default is 8.5
Selected Print Options: (empty)	
<input type="button" value="Print Single Page"/> <input type="button" value="Print Three Pages"/>	

This page allows to print a test document (one or three pages) without creating a send order in TCOSS. TCOSS is only accessed to load the print cover (specified here or the configured default cover). When printing without a cover, TCOSS is not involved.

All printing options may be attempted here. The selected options are displayed in the Selected Print Options field above the two print buttons. The syntax shown is the URL query syntax, which is one of the two options available for entering print options in the number parameter of a TCOSS send order (or in a “+OPTIONS” text block in a print cover).

Windows Printers

Attributes	Status	Name	ShareName	Commands
Local		TOPCALL TIFF to TCDC		[Print Test Page]
Local		TOPCALL Fax to TCRTF		[Print Test Page]
Local		TOPCALL Fax to TCDC		[Print Test Page]
Local		TOPCALL Fax		[Print Test Page]
Local, Shared		TinyPDF	TinyPDFx	[Print Test Page]
Local		Send To OneNote 2010		[Print Test Page]
Local		Microsoft XPS Document Writer		[Print Test Page]
Local		FreePDF XP		[Print Test Page]
Local		Fax		[Print Test Page]
Local		Biscom Fax Printer		[Print Test Page]
Network, Shared		\\at01svdc01\AT01P010	AT01P010	[Print Test Page]
Network, Shared		\\at01svdc01.emea.kofax.com\AT01P063	AT01P063	[Print Test Page]
Network	PendingDeletion, Offline	\\AT01VMPRN01\AT01P110	AT01P110	[Print Test Page]
Network	PendingDeletion, Offline	\\AT01VMPRN01\AT01P112	AT01P112,1	[Print Test Page]
Network, Shared		\\at01vmprn01\AT01P121	AT01P121	[Print Test Page]

This window is used to display the result of the last server command.

javascript:PrintTestPage(/at01svdc01/AT01P010);

This page lists all available Windows Printers and their status. Click [Print Test Page] to print a very simple test page (a large mirrored „Z“ indicates the printable area) with default settings. You can use the Test Printing page as described in the previous chapter for tests with more options.

IPP Test Client

Internet Printing Protocol Test Client

Function * Get Printer Attributes

HTTP Version * 1.1 HTTP version used in requests, 1.0 or 1.1

IPP Version * 1.0 IPP version used in requests, 1.0 or 1.1

Language * en-us natural language in text and name fields

Printer * 172.20.131.241 printer IP address or host name

Printer Uri ipp://172.20.131.241 printer-uri attribute in commands

User requesting-user-name attribute in commands

Job Id only for Get Job Attributes function

Text IPP text only
test page only for Print Job function, this text is printed

Do Function

transport layer HTTP/1.1

Internet Printing Protocol Version 1.0

successful-ok (0)

printer-attributes	Value(s)
printer-uri-supported	ipp://172.20.131.241/ipp:port1 ipp://172.20.131.241/ipp
uri-security-supported	none none
uri-authentication-supported	requesting-user-name requesting-user-name
printer-name	HPLJ5100DTN
printer-location	HP LaserJet 5100DTN
printer-info	MFG:Hewlett-Packard;CMD:PJL,MLC,PCL,PCLXL,POSTSCRIPT;MDL:HP LaserJet 5100 Series;CLS:PRINTER;DES:Hewlett-Packard LaserJet 5100

Use this page to check out a specific printer at the Internet printing protocol level. It may be used to test whether a printer actually supports IPP. Read its capabilities and verify that it is online.

The tests at the IPP level bypass the normal printing workflow and go directly to the IPP connector.

The required input fields are marked with a red asterisk. Choose a function with the select field at the top and enter the printer's IP address or host name in the Printer field. The IPP Version and Language fields can usually be left at their default values.

The Printer Uri field is set automatically if left empty, but may be edited also.

Print to File

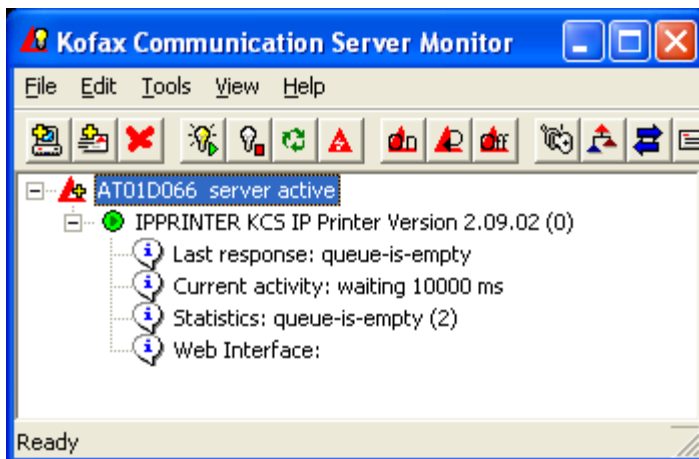
To capture all the PCL 5 data normally sent to the printer in a file, set the transport option to “file” and set the “printer” option to a path containing “test.pcl”, e.g. “c:/temp/test.pcl”.

Then the print data is stored in the file “test.pcl”, but not printed.

For security reasons the file name “test.pcl” is fixed, any other file name will cause the printing to fail with an error message like “invalid share name c:/temp/other.bin”.

KCS Monitor

The KCS Monitor displays the IP Printer process with 3 or 4 information lines; the fourth line is only shown if the optional web interface is active. The first three lines describe the current state of the printing workflow, giving the same information as the “Scheduler Details” of the “Micro Workflow Component” in the web monitor (see [Troubleshooting](#)).



Traces

A useful message trace captures the XML messages passed between the internal components of the IP Printer application, such as TCSI connector, Micro workflow and IPP connector.

To change the trace settings, stop the IP Printer application. Then run `Configure.bat` from the `c:\Topcall\IpPrinter\xx` directory (xx = instance: 00, 01, etc.) and restart the IP Printer after saving and closing the configuration window.

To activate the message trace, set the `MessageTraceSize` value in the configuration panel to a value such as 20 000. This setting will trace up to 20 000 characters of each message. Longer messages are truncated in the trace, but usually the interesting part is at the beginning. The `TraceLevel` value is unrelated to the message trace and can be set to “0” (or “55” to include a HTTP header trace).

The trace files reside in the `C:\TOPCALL\IPPRINTER\xx\trace` directory (xx = instance: 00, 01, etc.).

Chapter 8

Compatibility

The complete set of cover variables is supported with TCOSS release 7.64.00 or later.

With TCOSS releases prior to 7.64.00, the following cover variables were not resolved correctly.

Variable	Description	Remark
\$RcInfOr\$	Originally specified recipient info	empty
\$FNam\$	File name	empty in notification
\$MsgId\$	TC message Id	empty in notification
\$RTime\$, \$RDate\$	End of reception time and date	empty in notification
\$ITime\$, \$IDate\$	Intended sending time and date	empty in notification
\$OrInf\$	Originator info	empty in notification

Removed ippChannelDefault option

The ippChannelDefault option was introduced to IP Printer configuration with Kofax Communication Server 10.1.0. This option was removed in Kofax Communication Server 10.2.0.

Note The printer-URI is always used as other options may conflict with secure printing and other enhancements.

Chapter 9

Restrictions

It is not possible to use RTF cover sheets for text-only channels that do not support images (such as telex). This applies also to their delivery / non-delivery notifications. Only text cover sheets can be used.

Chapter 10

TC/LANPRT Replacement

Although the IP Printer is not a direct successor of the TC/LANPRT application, it will in many cases be possible to replace a TC/LANPRT installation with an IP Printer.

This chapter is intended to help in upgrading an existing TC/LANPRT installation to an IP Printer by describing the differences and possible problems.

Restrictions

The following TC/LANPRT feature is not provided by the IP Printer. If this feature is required, an upgrade is not possible:

- Converting TCOSS messages to TIFF and MODCA image format files

The IP Printer can print via IPP, port 9100 protocol, a file share or Windows printer drivers; make sure that one of these options is available.

TC/LANPRT Feature Replacement

TC/LANPRT uses the TCOSS "mask" functionality, and options are specified in:

- Number parameter (mask and send switches)
- Mask (commands between ++HEADER and ++BODY)
- Registry (footer line font size)

The IP Printer, on the other hand builds on the "cover" feature, and options may be specified in:

- Number parameter (all options)
- Cover (in "++OPTIONS" text block, all options except cover)
- IP Printer configuration (selected options)

Mask

For TC/LANPRT, the sending mask is specified in the number right after the channel prefix in the form "+A" to use, such as the mask file "A+A" from the TCOSS +MAIL5V folder.

For the IP Printer, the mask has to be replaced by a cover sheet from the TCOSS FIS folder, which is specified in the form "cover=Name" in the number parameter (See [Document Options](#)).

The following table shows all available mask parameters and how they can be substituted by cover variables:

Mask parameter	Meaning of mask parameter	Replacement cover variable
\$A\$	author	\$ERef\$ (\$FNam\$ in notifications)
\$B\$	personal reference as specified in the number parameter (without parentheses)	-
\$C\$	cost center	\$Cctr\$
\$D\$	date in format YY-MM-DD	\$Date1\$
\$DSS\$	reception start date	\$CDate1\$
\$DES\$	reception end date	\$RDate1\$
\$E\$	original file name of the envelope	\$ENam\$
\$H\$	hidden normalized number	-
\$I2447\$	NOTPA field, author of document	\$ERef\$
\$I4950\$	NOTPA field, error code	\$Laction\$ (see also \$Serror1\$)
\$I5156\$	date of sending	\$Date1\$
\$I5760\$	time of sending	\$Time1\$
\$I6162\$	sending channel number	\$SChan\$
\$I6368\$	transmission fee	\$Cost\$
\$I6999\$	answer back	\$Lnote\$
\$I113118\$	connection time	\$SDur\$
\$I119138\$	node list	\$Nodes\$
\$I159166\$	sending media server	\$SMedia\$
\$L\$	node list	\$Nodes\$
\$N\$	number parameter	\$LocAdd\$
\$O\$	normalized originator	no direct replacement, \$OrInf\$, \$USNam\$, \$UComp\$, \$UDept\$, \$UName\$, \$UAdd\$ etc. contain originator information
\$P\$	possible duplicate message	\$P\$
\$Qs\$	current number of the number series' s	-
\$R\$	document reference	\$FNam\$
\$S\$	document serial number	no direct replacement, \$Docnr\$ contains similar information (document-page number)
\$T\$	time of day in format HH:MM:SS	\$Time1\$
\$TS\$	reception start time	\$CTime1\$
\$TE\$	reception end time	\$RTime1\$
\$U\$	extended user ID of recipient	\$SNam\$

Mask parameter	Meaning of mask parameter	Replacement cover variable
\$V\$	extended user ID of originator	\$USNam\$
\$W\$	answer back and error message	\$Lnote\$
\$Y\$	priority (max. field length = 1)	-

Use Mask parameters to specify the start and end position for a part of the field in the format \$A_{xy}\$. Cover variables can only be truncated or padded with spaces at the end by including underscore characters as in \$ERef____\$.

Many other cover variables are not listed here. See [Print Cover](#).

When converting masks for delivery or non-delivery notifications, keep in mind that the IP Printer does some extra preprocessing of notifications to use the original mail entry and the original message header for cover variable resolution (see [Notification Printing](#)). It is not necessary to swap originator and recipient fields as done in the LANPRT masks.

Send Switches

In TC/LANPRT, send switches are specified in the number parameter, right after the sending mask. Some of the send switches had fixed values, because they were designed for fax sending, not for printing, and they have no replacement.

The following table shows all TC/LANPRT send switches and their IP Printer option substitute.

Send switch	Send switch functionality	IP Printer replacement option
H	no (additional) header line	-
B	no back reception of printout	-
X	extended dialing	-
F	fine mode printing (300 dpi)	resolution=300 (is default)
N	normal mode printing (150 dpi)	resolution=150
S	suppress footer line	footer= (empty string)
L	letter page format instead of A4	format=letter
o	print first page only	pages=1
70..100	scaling factor	scale=70 (see note below)

Note The IP Printer has an “auto-scale” feature that automatically adapts the scale. In most cases, it is not necessary to explicitly specify a scale value.

TC/LANPRT Commands

TC/LANPRT commands are specified between “++HEADER” and “++BODY” in the sending mask. Some of them can be replaced by IP Printer options; the following table gives an overview.

TC/LANPRT command	IP Printer replacement
Printing command (P)	printer=xxxx (see Restrictions)
Selection of paper bin for first and consecutive pages (-p:x,y)	source=x&source-2=y
Convert command (C)	-
Windows command execution (D, E)	-
Variable footer line (F)	footer=(string containing cover variables)

Note that the TC/LANPRT footer line could contain mask parameters that have to be replaced by cover variables in the IP Printer "footer" option. See also [Footer Line Cover Variables](#) for additional functionality provided by the IP Printer. Cover Variables are not resolved in all other ++HEADER commands.

Font Size of Footer Line

Use TC/LANPRT to configure the footer line font size in the registry value

```
"HKEY_LOCAL_MACHINE\Software\Topcall\TCLANPRT\Printer
\FooterHeight" (REG_DWORD) in points, default is 8.5 points (1 point = 1/72").
```

The same functionality is provided by the IP Printer option "point", such as "point=6", and the default is 8.5 points.

Example

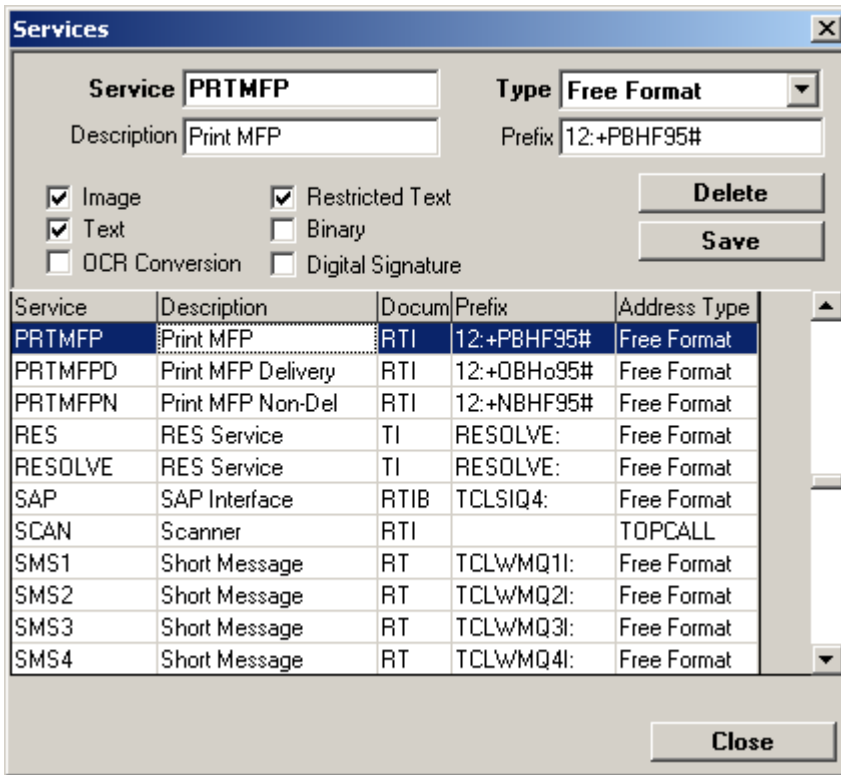
The following example is based on a MFP integration scenario. TC/LANPRT is used here to print incoming fax messages and notifications.

TC/LANPRT Configuration

This section describes TC/LANPRT configuration.

Services

The TC/LANPRT services PRTMFP, PRTMFPD and PRTMFPN are created and configured as shown below.



The switches used in the “Prefix” field have the following meaning:

- “12:” specifies the ULL channel configured with WCONFIG.
- “+P”, “+O” and “+N” are the masks used for printing; they are defined and stored in the TCOSS System Folder
- “o” specifies that on back reception, only the first image page is printed
- “95” is the scaling of the back reception image
- “#” ensures that the switches and the printer name are parsed correctly; otherwise, printer names starting with a digit could be misinterpreted as scale factor.

Masks

There are three masks: one for printing incoming faxes (+P mask), one for printing delivery notifications (+O mask), and one for printing non-delivery notifications (+N mask). The masks are stored in the TCOSS folder “+MAIL5V”. They could be defined as shown below:

Printing Mask for Non-Delivery Notifications

Mask +N

```

++HEADER
P$N1899$ -dPCL5
++BODY
===== NON DELIVERY REPORT of message: $A0101$$A0312$ =====

Recipient: $O1949$ Number of pages: $I9799$
Last send attempt: 20$I5152$/I5354$/I5556$ $I5758$:I5960$
    
```

```
Error code: $I4950$
=====
```

Printing Mask for Delivery Notifications

Mask +O

```
++HEADER
P$N1899$ -dPCL5
++BODY
===== DELIVERY REPORT of message: $A0101$$A0312$ =====

Recipient: $O1949$ Number of pages: $I9799$
Answer-Back: $I6999$
at: 20$I5152$/$I5354$/$I5556$ $I5758$:$I5960$

Attn: If above fields are empty, the message was sent internally!
=====
$X$
```

Printing Mask for Incoming Faxes

Mask +P

```
++HEADER
P$N1899$ -dPCL5
++BODY
$X$
```

User Events

The print events in the TCOSS user profiles are set as follows.

Event	Service	Number
In	PRINTMFP	//DC1/HPLJ4100_SDS_PCL6
Delivery	PRINTMFPD	//DC1/HPLJ4100_SDS_PCL6
Non-Delivery	PRINTMFPN	//DC1/HPLJ4100_SDS_PCL6

IP Printer Configuration

This section describes the IP Printer configuration.

Services

The equivalent IP Printer services PRTMFP, PRTMFPD and PRTMFPN are set up as shown below. It is assumed that the IP Printer has been installed to use the queue "IP".

Service	Description	Prefix
PRTMFP	print incoming	IP:cover=PRINT&printer=
PRTMFPD	print delivery	IP:cover=PRINTDEL&printer=
PRTMFPN	print non-delivery	IP:cover=PRINTNON&printer=

The service prefix is used to specify an appropriate print cover and the keyword “printer=” so that a printer IP address or a printer share can be entered as number.

Note that the length of the prefix field is limited to 32 characters by TCOSS. This is too short to specify further options in the prefix. All further printing options have to be put into the cover.

Covers

These covers are stored in the TCOSS FIS folder. The “++OPTIONS” control line and the actual options following it (“transport=file&...”) have to be put into a separate text block.

Cover “PRINTNON” to print non-delivery notifications:

```
++OPTIONS
transport=file&pages=1&
===== NON DELIVERY REPORT of message: $FNam_____ $ =====
Recipient: $LocAdd_____ $ Number of Pages: $EPg$
Last send attempt: $Date1$ $Time1$
Response: $Lnote$
Error code: $Laction$ ($SError1$)
=====
```

----- A4 -----

The output produced by this cover is not 100% identical to the resolved mask “+N” because cover variables lack the functionality to pick out specific parts of a field. On the other hand there is additional information available through cover variables, such as the error text in “\$Error1\$”.

The mask “+N” does not include the back-received message, if any. This functionality is emulated in the cover by putting a page break at the end (so that the message itself starts on the second page) and the option “pages=1” to print only the first page.

Cover “PRINTDEL” for delivery notifications

```
++OPTIONS
transport=file&pages=1&pagebreak=skip&
===== DELIVERY REPORT of message: $FNam_____ $ =====
Recipient: $LocAdd_____ $ Number of Pages: $EPg$
Response: $Lnote$
at: $Date1$ $Time1$
=====
```

Again, the resolved cover is not identical to the corresponding mask “+O”. Additional delivery information available through cover variables is not used in this example.

The “pagebreak=skip” option puts the start of the message on the cover page. It is not necessary to configure all TCOSS fax channels for fax back-reception without leading page break, config line 53 can be 3 (full image with page break) or 4 (without page break).

Cover “PRINT” for incoming faxes

```
++OPTIONS
<transport>file</transport>
<footer>$ENam$ received at $CDate1$ $CTime1$ $tab100$page $c$/$p$</footer>
```

The mask "+P" in the LANPRT scenario does not add any text to the message; it just sets a different footer line.

User Events

The print events in the TCOSS user profiles can be left unchanged. The IP Printer option " transport=file" was chosen to print via a file share. The same transport was used by TC/LANPRT, so the number information (printer share) does not need to be changed.

Chapter 11

Appendix

This appendix provides additional information about IP Printer.

HTTP Status Codes

Status Code	Description
400	Bad Request
401	Unauthorized
402	Payment Required
403	Forbidden
404	Not Found
405	Method Not Allowed
406	Not Acceptable
407	Proxy Authentication Required
408	Request Timeout
409	Conflict
410	Gone
411	Length Required
412	Precondition Failed
413	Request Entity Too Large
414	Request-URI Too Long
415	Unsupported Media Type
416	Requested Range Not Satisfiable
417	Expectation Failed
500	Internal Server Error
501	Not Implemented
502	Bad Gateway
503	Service Unavailable
504	Gateway Timeout
505	HTTP Version Not Supported

Socket Error Codes

Socket Error	Description
10048	Address already in use
10049	Cannot assign requested address
10050	Network is down
10051	Network is unreachable
10052	Network dropped connection on reset
10053	Software caused connection abort
10054	Connection reset by peer
10055	No buffer space available
10060	Connection timed out
10061	Connection refused
10064	Host is down
10065	No route to host
10067	Too many processes
10101	Graceful shutdown in progress
11001	Host not found
11002	Non-authoritative host not found

Units of Measurement

Unit	Description
inch	Traditional unit of distance equal to 1/12 foot or exactly 25.4 mm.
point	Unit of length used by typographers and printers, defined as 1/72 inch (0.013 888 9 inch or 0.352 777 8 millimeters).
decipoint	1/10 of a point or 1/720 inch

Windows Event Log IDs

ID	Type	Description
36000	Information	Successful login to TCOSS
36001	Error	Login to TCOSS failed