

ithaca[®]

a product of **TRANSACT**

Transact Windows Driver Install Manual

**For POSjet[®], BANKjet[®], iTherm[®], and EPIC[®]
Printers**

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Change History

Rev A	First Release	September 2007
Rev B	Updated for Driver Version 1.2.0.0	November 2007
Rev C	Added Eject Page with FF option and BankJet 2500 Support For Driver Version 1.2.0.1	January 2008
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Rev E	Added information about install choices, Information about unsigned drivers, and expanded list of operating systems and printer models	July 2009
Rev F	Restructured and added screen shots for simplest install	August 2009
Rev G	Added hints on roll-out script development Added description of new language monitor optional processing functionality	June 2012

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1. Introduction

This document describes the procedures for installing Transact Windows drivers. General familiarity with using Windows and installing software is required and is not covered herein.

1.1. Hardware and Software Requirements

To use the Windows drivers, the host PC and Transact printer is expected to meet these hardware and software requirements:

1.1.1. Host PC

The host PC must be equipped with the interface required to attach your Transact printer:

- A serial port,
- A parallel port,
- A USB port, or
- An Ethernet port.

The host PC should be running one of the following supported Windows operating systems; (latest OS versions are fist supported by field test driver versions):

- Windows 2000,
- Windows Server 2003,
- Windows XP
- Windows Vista
- Windows Server 2008
- Windows 7.

1.1.2. Transact Printer

Transact Windows drivers support the following models of Transact printers. The drivers contain a language monitor which can use a Period Status Back feature in Transact printers for advanced printer status monitoring. The printer should have the specified or later firmware revisions. Older firmware revisions are supported with reduced status monitoring features. For more information on the language monitor and the Periodic Status Back feature, see Chapter 3.

Supported Model	Minimum Firmware Revision with built-in Periodic Status Back Support
iTherm 280	PE2800-1.56
Epic 430	PE-4303-1.14
POSjet 1500	PE1600-2.42
BANKjet 1500	PE1600-2.42
BANKjet 1580	PE1680-1.10

BANKjet 2500	Any
Epic 880	Any
New 2009+ models	Any, as released

Table 1 Supported Transact Printer Models

2. Driver Installation

This chapter describes the procedures for installing the Windows driver and configuring the printer for use with the Windows driver.

The printer driver software directory and its content must be accessible as a permanent place (copied) or temporary place (removable storage plug-in) seen in Windows Explorer at the time of installation. In Windows Vista and later, many actions will require administrative mode to succeed. Because Windows hardware install sequences can take many routes, only several common sequences are described with screen shots. See Appendix A for more information.

2.1. Configure the Printer

Before connecting the printer to the host PC, make sure the printer is configured correctly to work with the Windows driver. Depending on how the printer was acquired this may already been done for you. If not then make sure you verify your printer's configuration against a known good configuration for your intended use. Please refer to your printer's manual for instructions on how to verify and possibly manually set the configurations for your Transact printer.

In particular, pay particular attention to these configuration parameters:

Parameter	Correct Configuration
<i>Emulation Mode</i>	
Emulation Mode	Ithaca PcOS
<i>RS232 Serial Interface</i>	
Windows PnP	Disabled
Offline Option	Buffer Full Only
<i>USB Interface</i>	
Windows PnP	Enabled
USB PnP Mode	Printer Only
USB Disconnect When Offline	No
Offline Option	Buffer Full Only

Table 2 Printer Configurations

Now you are ready to add your Transact printer to the host PC.

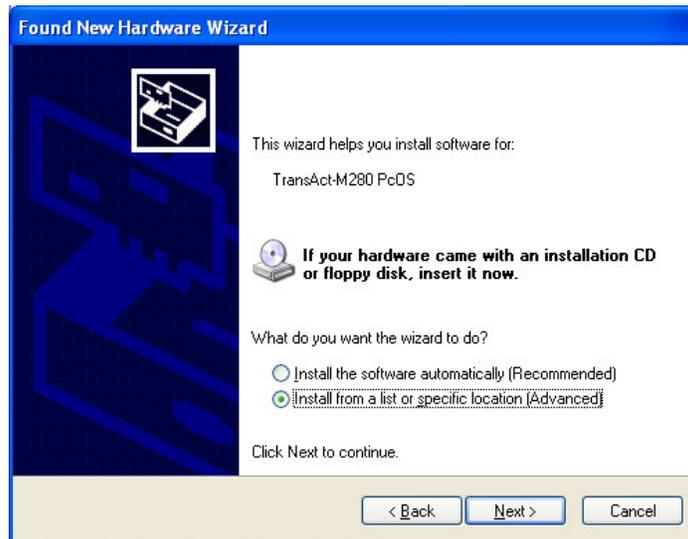
2.2. Connect a Printer

Connect the printer to the computer and power up the printer if not already on. Windows should automatically find the printer:

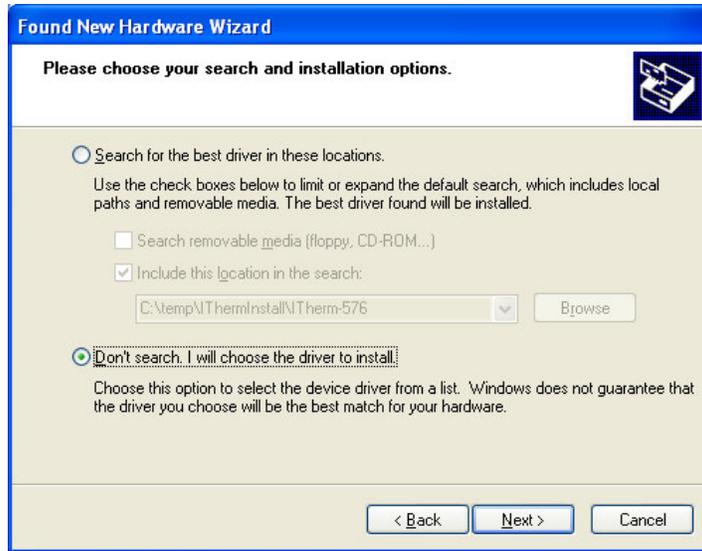


Choosing No, not this time is appropriate as the driver will be copied from the install media / location. If the found new hardware wizard does not appear then use the add a printer method shown in section 2.3

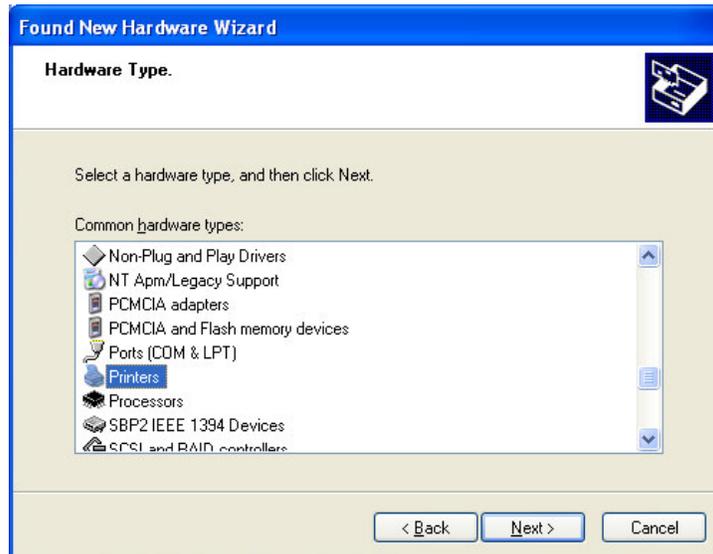
Choose install from a list or specific location on the next screen; this will speed up Windows searching:



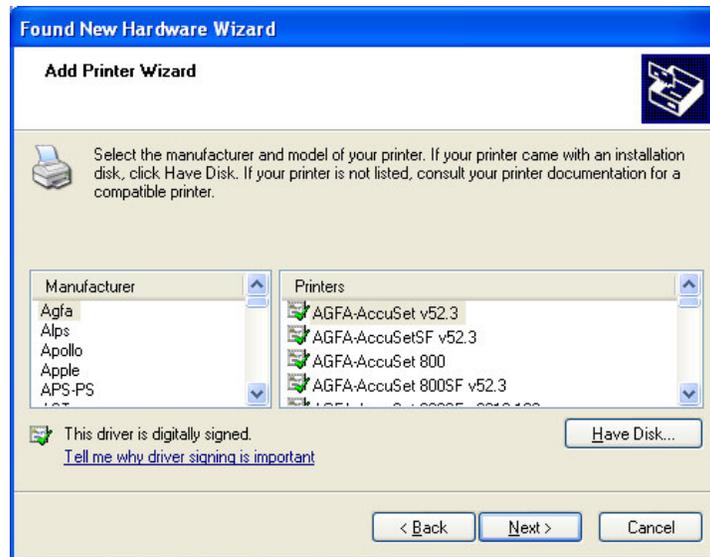
On the next screen choose Don't search to positively direct Windows to the driver that you wish to install:



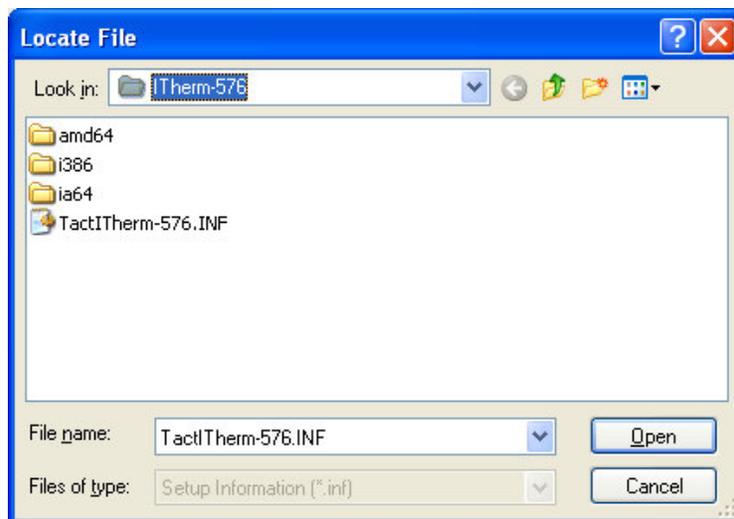
On the hardware type screen, choose printers:



On the next screen, choose have disk:



On the next screen, browse to the driver install directory and choose the directory file name that matches the printer configuration that you want to use. The example shows a 576 pixel wide series 280 printer; hit open and on the next screen click ok:

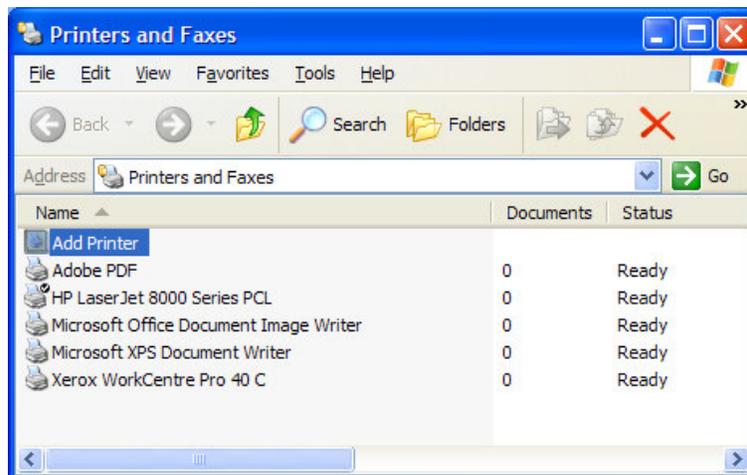


The next screen will show the default printer name, click next, and a file progress screen will track the installation. (Windows 2000 and test releases on Win XP will show an unsigned driver warning – click continue anyway). You should then arrive at the completion screen, hit Finish:

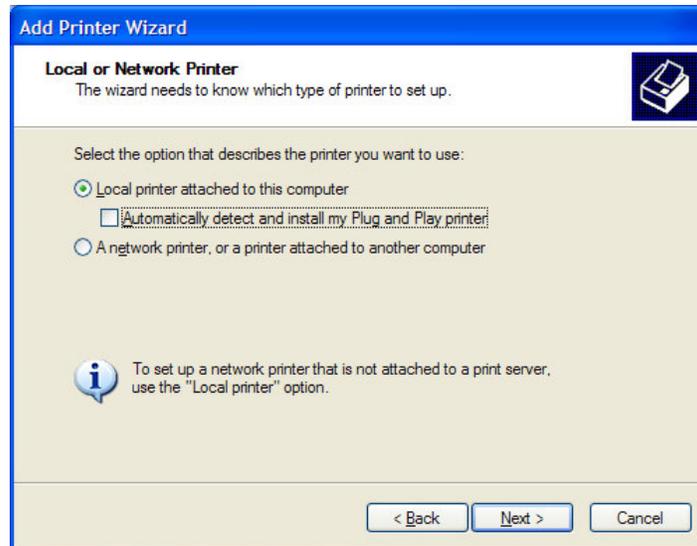


2.3. Add a Printer

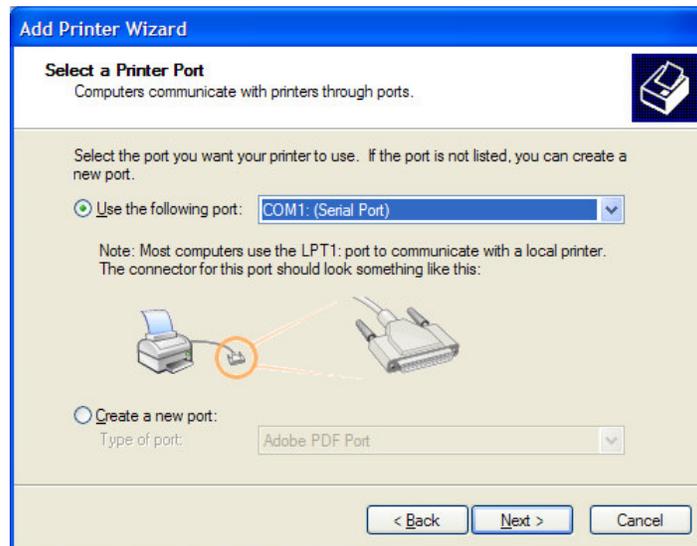
For serial printers or if Windows did not automatically launch the found new hardware wizard, choose **“Printers and Faxes”** from the Start menu or Control panel. Click on the **“Next”** button on the **“Welcome to Add Printer Wizard”** screen.



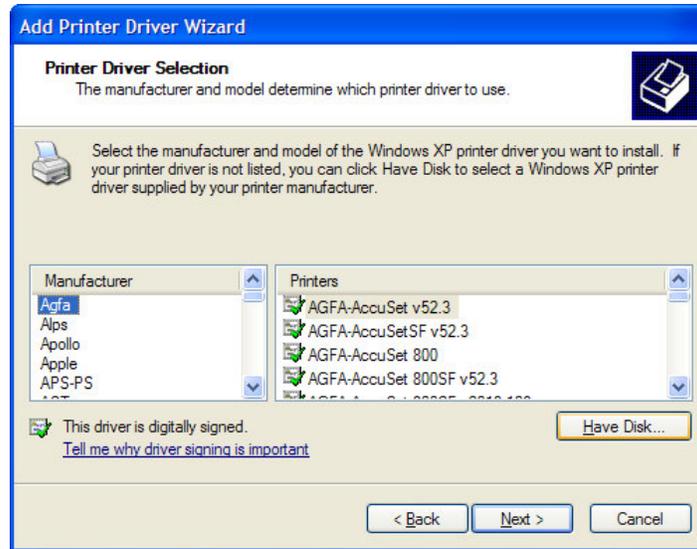
Select **“Local printer attached to this computer.”** *Uncheck* the **“Automatically detect and install my Plug and Play printer”** option. Click on the **“Next”** button.



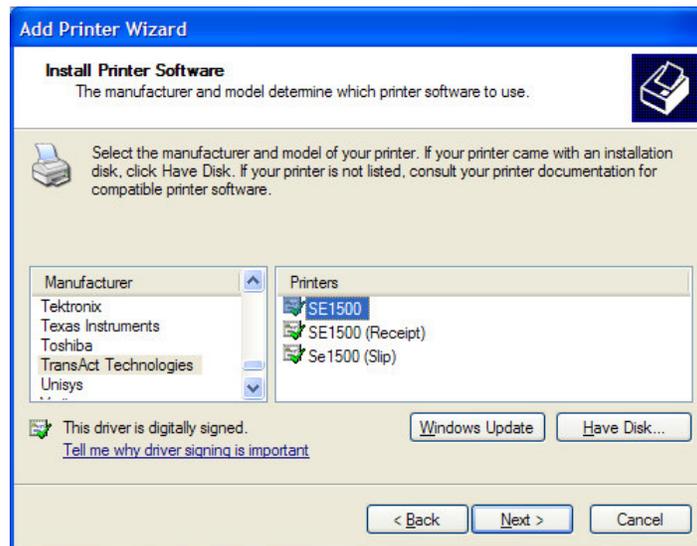
On the “Select a Printer Port” screen, select the port to which the Transact printer is connected. Click on the “Next” button.



If this is the first time a particular printer model driver is being added to the PC, on the next screen click the “Have Disk...” button and locate the INF file of the Windows driver for your Transact printer.



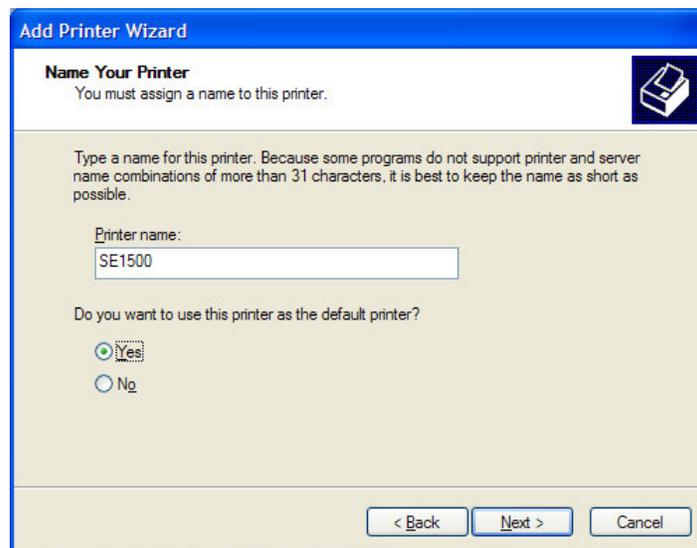
Otherwise, if this is a case where the driver already has been installed on the PC, then on the next screen, scroll down the “Manufacturer” list to select “**Transact Technologies.**” Choose the model of your Transact printer. Click on the “**Next**” button.



Select the “**Keep existing driver (recommended)**” option (if not upgrading the driver). Click on the “**Next**” button.



On the next screen, name the Transact printer you are adding and choose whether you want to use it as the default printer on the host PC. Click on the “Next” button.



On the next two screens, choose if you want to share the printer and print a test page. On the “Completing Add Printer Wizard” screen, click on the “Finish” button to complete adding the printer. The printer can print the standard Windows test page if you chose to print a test page. That page contains a Windows logo and some text.

Note: For printers configured at small widths, such as 304 pixels, the test page prints only the Windows logo symbol with no following text.

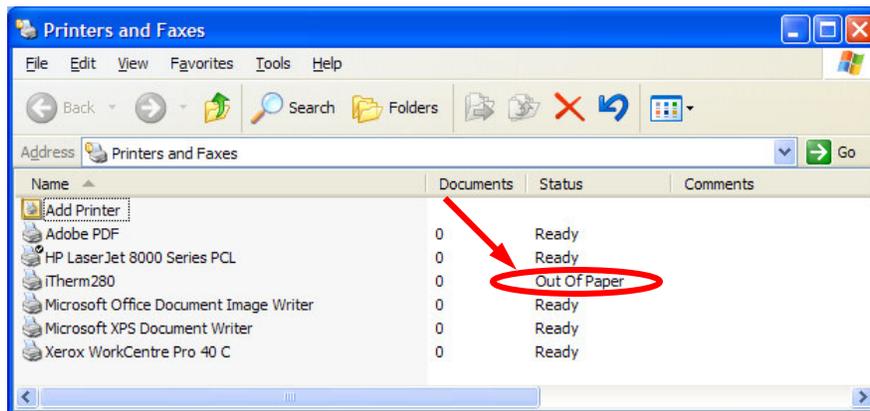
3. The Language Monitor

3.1. Overview

Windows printer drivers automatically use a component to the Windows print spooler called the Language Monitor to provide advanced printer status monitoring features. Transact Windows driver has a language monitor (LM) that can be configured for your application's needs.

LM reports printer status in two ways. It reports the following error conditions in the printer's Status field in the "Printer and Faxes" window:

- Door Open
- Out Of Paper
- Paper Jam (if the printer has a paper jam sensor)
- Output Bin Full (on ticket printers if there is a ticket in transport)
- Paper Problem (if paper is low or out on printers with paper low sensor), and
- Requires User Intervention (if the printer is in error and printing is stopped).

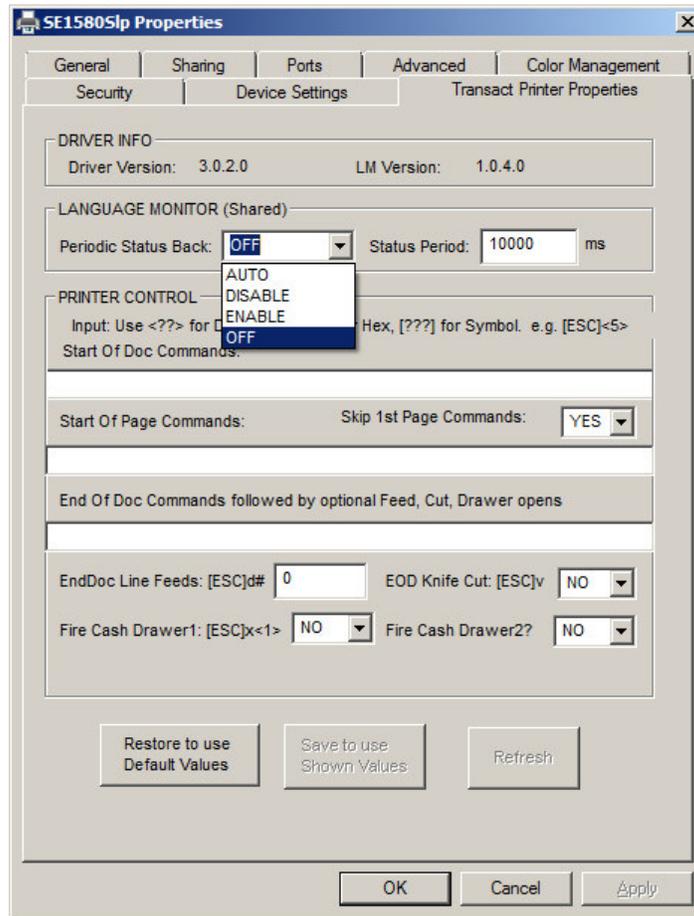


In addition, applications can also call `GetPrinterData()` with the appropriate parameters to obtain raw status data reported by the printer. Please refer to the *Ithaca Printer Windows Driver API* document for the complete API.

LM uses the **Periodic Status Back (PSB)** feature in newer Transact printers for advanced printer status monitoring if the printer firmware supports PSB. See Table 1 for the minimum firmware revisions with built-in PSB support. If the printer's PSB feature is enabled by the LM, it automatically reports its status back to the host PC at specified intervals. The LM can then update Windows print spooler or applications via Windows driver API accordingly. If the printer does not support PSB, the LM can be configured to poll printer status. However, if the printer is in error conditions such that it can no longer accept print data or commands from the host PC, LM will not be able to detect the error using polling. Polling could also decrease the printer's performance as polling and print data compete for bandwidth.

3.2. Configuration Parameters

The language monitor uses 2 parameters that are shared among all Transact Windows Printer Drivers installed on this PC and also holds the default values for per-printer parameters that are used up to the time that at least one of these is changed. The interface to view and set these values is shown next:



<i>PeriodicStatusBack</i>	
OFF	LM is inactive and does not monitor printer status. Any PSB status received from the printer by the host PC is not processed. <i>This is the default setting.</i>
AUTO	If printer's firmware supports PSB, LM will enable PSB and monitor the status received from the printer. If the printer does not support PSB, LM will not monitor its status.
ENABLE	If printer's firmware supports PSB, LM will enable PSB and monitor the status received from the printer. If the printer does not support PSB, LM will monitor its status using polling.
DISABLE	LM will actively disable PSB on all printers. <i>Note: In this setting, erroneous 'P' or 'p' characters may be printed if the firmware</i>

	version does not support PSB during boot up or whenever the Windows spooler is restarted.
<i>TransactStatusInterval</i>	
Any integer between 1000 and 30000	Frequency of the printer reporting its status to LM (using PSB) or LM polling for printer status in milliseconds. This value is a tradeoff between the frequency of printer status update and printer performance. <i>Default Setting: 10,000 (10 seconds)</i>
<i>Defaults for per-printer properties (held along with the Status Back and Interval values)</i>	
<i>Text Edit Boxes</i>	These 3 edit boxes accept text in the format described by the Input heading and provide the following three printer control actions:
Start of Doc	Sends the held text to the printer before document printing starts
Start of Page	Sends the held text to the printer before starting to print each document page
Skip 1 st Page Commands	If YES then the first page's Start of Page text is not sent, thus effectively acting as end page add added text if there are 2 or more pages.
End of Doc	Sends the held text to the printer after completing the last document page
<i>EndDoc Line Feeds</i>	Sends the specified number of line feeds after finishing printing. The maximum value is limited to 10000.
<i>EOD Knife Cut</i>	If YES sends a knife cut command after finishing printing and feeding lines.
<i>Fire Cash Drawer1,2</i>	If the printer model has the cash drawer feature, a YES will send an open cash drawer command after finishing printing and optional line feeds and cut. A selection of FALSE will not disable the cash drawer selection in the per-printer properties GUI.

Table 3 Language Monitor Configuration Parameters

Click on the “Apply” or “OK” button for your changes to take effect. The printer driver will restart the Windows print spooler to use the new configurations. Active print jobs might be disrupted briefly.

The “Apply” button saves the settings and the window remains active, while the “OK” button saves the settings and exits the window.

You will be asked to confirm the stopping and starting of the spooler since that will interrupt all in-process print jobs on this PC.

The “Cancel” button exits the window without saving any changes.

Note: In Microsoft VISTA or newer OS, you must run this utility in administrative mode for the changes to take effect.

3.3. Language Monitor Translation File

In addition to the above parameters, the language monitor, version 1.0.5.2 & higher, supports print time string to printer command translation. Based on the presence of a translation properties file, the language monitor will replace any print data matched strings to the corresponding bytes from the properties file.

For example. If the properties file contains data such as

```
<@Boldon>= 0x1B,0x45
```

```
<@Boldoff>= 0x1B,0x46
```

When the application sends print data containing ASCII <@Boldon> and <@Boldoff> strings, these will be replaced by the printer bold on and off commands as specified in the properties file. All print data within these token brackets would then be printed in Bold.

The name of such a properties file must be specified in the language monitor registry using the following registry key, adding a value name – data string:

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Print\Monitors\TransactLM]
"TransactTranslatePropsFile"=<Properties File Name with complete path>
```

Eg.

```
"TransactTranslatePropsFile"="C:\Test\TransactStrCommands.props"
```

Here is an example of the entire content of such a file:

```
# =====#
# printerControlChar.properties
# used by Printers to mark the control chars in a report script
# usage example: <@BoldOn>This is a bold test<@BoldOff>
#
# =====#
LinePitchZeroOn=0x1B, 0x33, 0
LinePitchZeroOff=0x1B, 0x32
BoldOn=0x1B, 0x45
BoldOff=0x1B, 0x46
Cut=0x1B, 0x6D
```

Note1: “<@” are required characters in the print job but are not in the definition file. A definition without any substitution bytes (nothing follows the = on that line) is processed as 0 bytes replacing that token.

Note2: Any invalid definition in the definition file that might cause a language monitor failure in parsing would result in the language monitor substituting only those tokens that have been successfully parsed. It is the user’s responsibility to ensure correct file syntax for the language monitor to perform command translations.

3.4. Language Monitor Discard of Meta Data Bytes

The language monitor, version 1.0.5.2 & higher, supports specifying a match string of up to 20 characters to be used as a print data terminator; meaning that all data after this terminator will not be sent to the printer.

The monitor looks in the registry key as above to determine if any particular string should be used to identify the termination of print data in every print job.

This must be specified in the language monitor registry using the following registry key, adding a value name – data string:

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Print\Monitors\TransactLM]
```

"TerminateDocStr"="String to be used for print data termination"

If present in the registry, all data after the last occurrence of this string, but not this terminating string, is discarded; i.e. only data up to the last occurrence of the specified string will be sent for printing.

Example:

```
"TerminateDocStr"=">"
```

All data after last occurrence of “>” in the print data stream will be discarded. That last “>” remains.

Absence of this string in a print job will simply result in all of the data being sent to the printer. No data termination will occur.

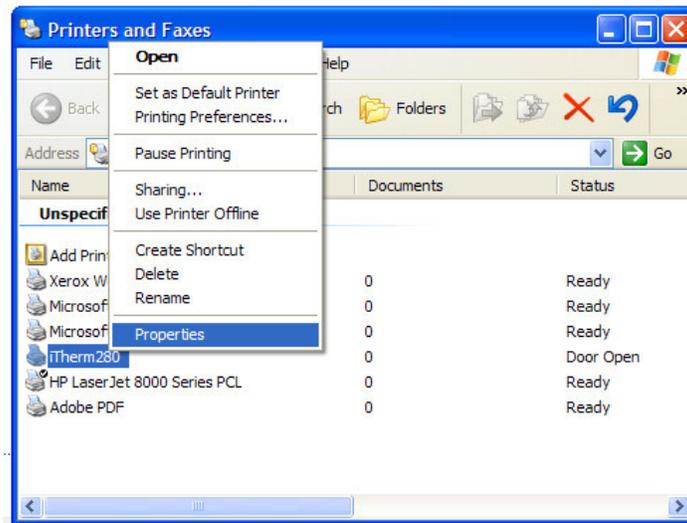
Note: If either or both of the above value names are present under the TransactLM key at language monitor initialization time (which happens any time that the Windows print spooler service is started (cmd for this is “net start spooler” which requires administrative privilege)), then the defined translation file is read in and string match-substitutes saved and/or the terminating string is saved.

When the LM is handed a print job, termination discard is done first, then substitution processing, and finally the print job is sent to the printer port.

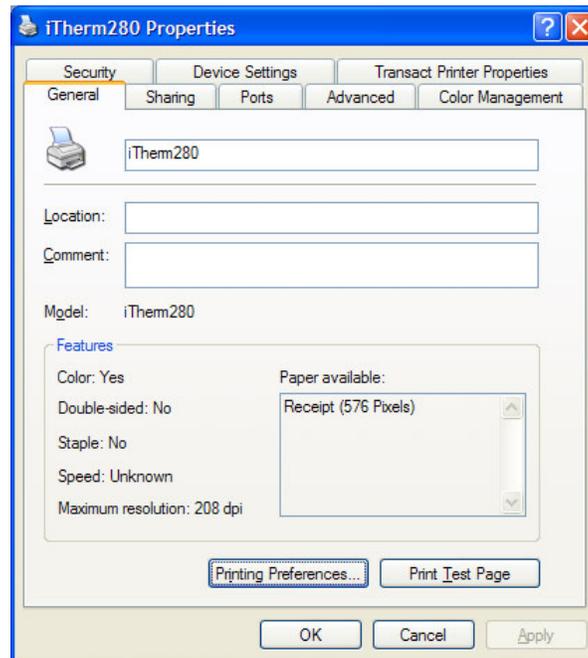
4. Operations

4.1. General Printer Configurations

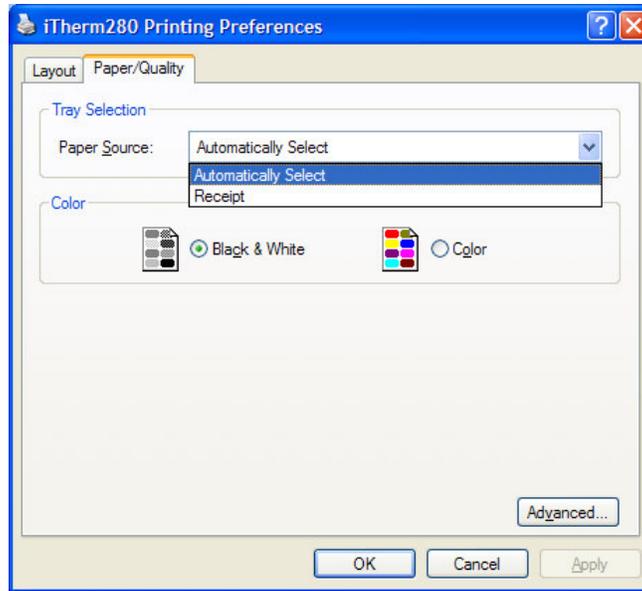
You can access Transact printer driver's configurable features by right-clicking on the Transact printer in Printers and Faxes window and select "Properties."



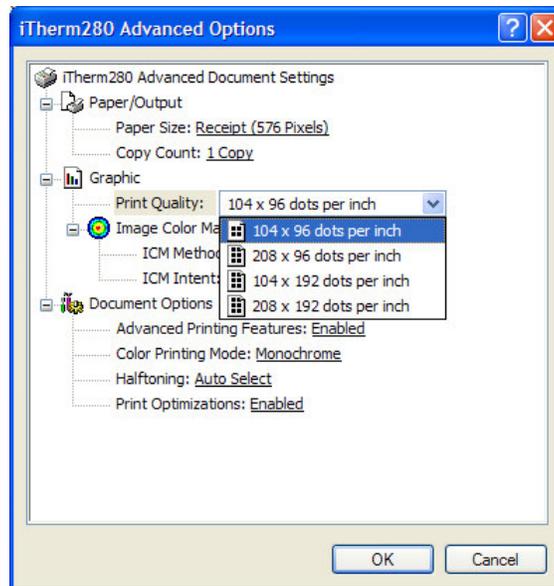
Under the General tab, click on the "Printing Preference" button.



In the Printing Preferences window, you can select paper source (receipt or slip, if your printer is equipped with slip printing) and configure the printer to print in monochrome or color (if the color feature is available).

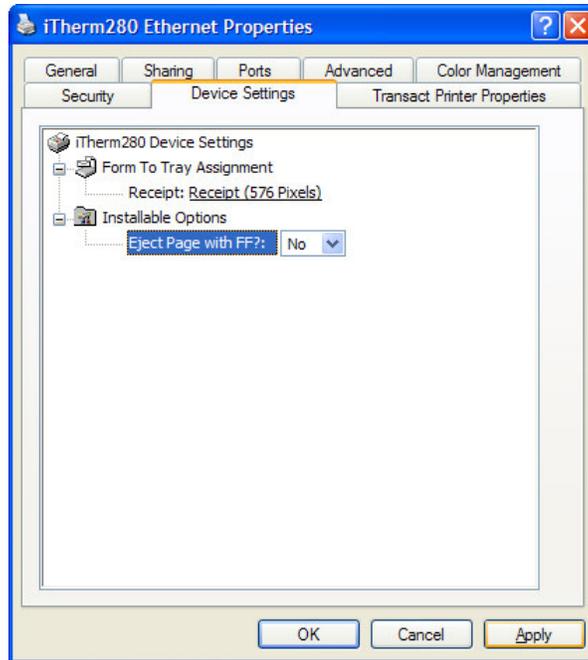


Click on the “Advanced” button, you can further configure more features such as printing resolutions.



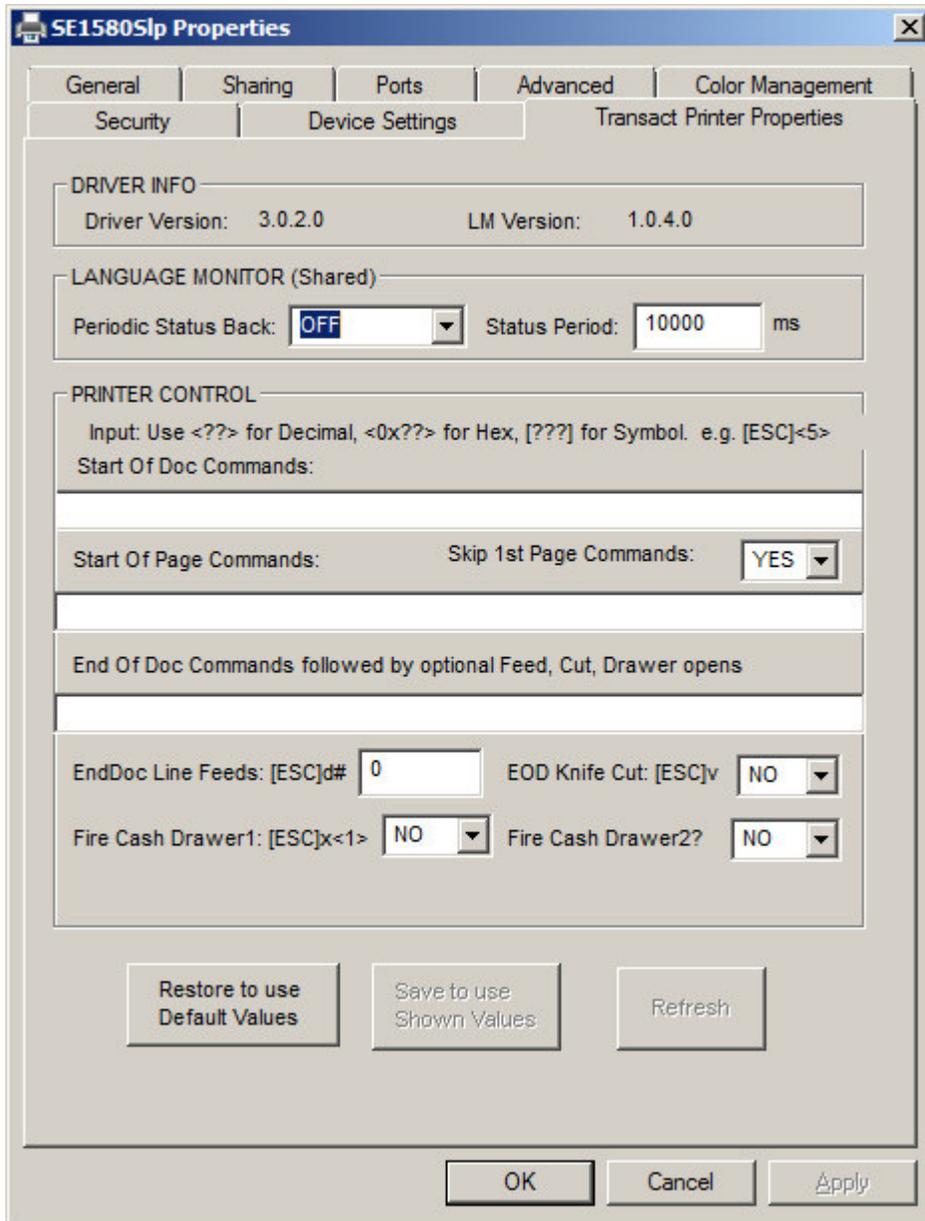
4.2. Paper Length Control

Optionally, the Windows driver can send a form feed to the printer at the end of each print job to produce a fixed-length receipt. If variable-length receipts with minimal trailing white space are not desired, set “Eject Page with FF?” to Yes (default value is No) under the “Device Settings” tab in the printer’s Properties window. Click on the “Apply” button for the change to take effect.



4.3. Transact-specific Configurations

Go back to the printer's Properties window. More Transact-specific configurations are available under the Transact Printer Properties tab.



You can identify the version numbers of the Windows driver and the accompanying Transact Language Monitor here. You can also modify the LM's behavior configuration. Please note:

1. The LM configuration is global. If more than one Transact printers is attached to the host PC, any changes to the configuration will affect all connected Transact printers.
2. If a new Transact printer is added to the host PC, the LM configuration will revert back to its default value. The default value will take effect on all connected Transact printers.

In the Printer Control section, you can add printer commands to be sent at the beginning (StartDoc commands), at the top of each page (StartPage commands), and end (EndDoc commands) of each document. Please consult the printer's Programmer's Manual for the available printer commands. Unlike LM configuration, StartDoc, StartPage and EndDoc

command configurations are per printer. You can enter different commands in each printer's Properties window.

You can also specify the number of line feeds to add after a document has finished printing and whether or not a knife cut should then be performed.

Also you may be able to specify whether or not to fire the cash drawers; this selection will be unavailable if the defaults for your printer disallow the setting.

Click on the "Save to use Shown Values" button for your changes to take effect. This printer interface will restart the Windows print spooler to use the new configurations. Active print jobs might be disrupted briefly.

You can also reset all values to instead use the current defaults by hitting the "Restore to Default Values" button. You will be asked to confirm this selection.

The "Refresh" button will discard all the changes made so far. You will be asked to confirm this action.

Note: In Microsoft Vista and newer OSes you must be running printer properties in administrative mode for the changes on this tab window to take effect. A utility that can be run in this mode is provided for times when Windows does not directly offer a choice for gaining administrative mode in the standard printer properties GUI.

5. Appendix: Info and driver first install method

Drivers are required to be “signed” in Windows 64 bit versions and also 32 bit versions newer than Vista. Signing that works on current OS version is handled by Transact through Microsoft.

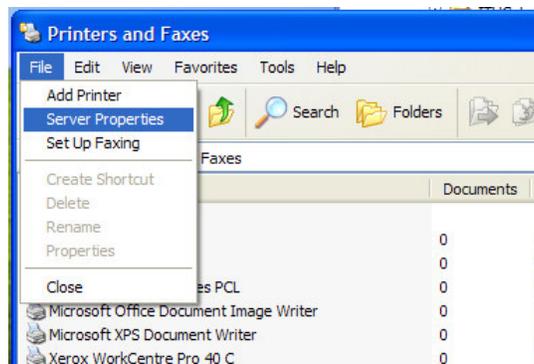
Drivers released for testing purposes that work on the newest OSes can be “developer” signed; this requires a first step of adding the developer certification to the OS – this is described in a test installation info document.

The newest versions of Transact drivers are provided to cover all the popular Windows CPU platforms: X86 (Intel compatible), AMD64, and IA64. You will need to know which platform is to be installed.

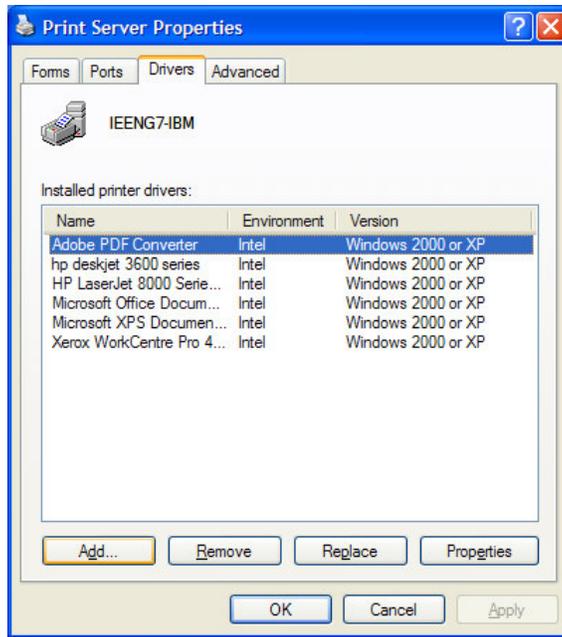
The following shows how to install a driver before plugging in or adding printer(s):

5.1. Driver Install for a Transact Windows Printer

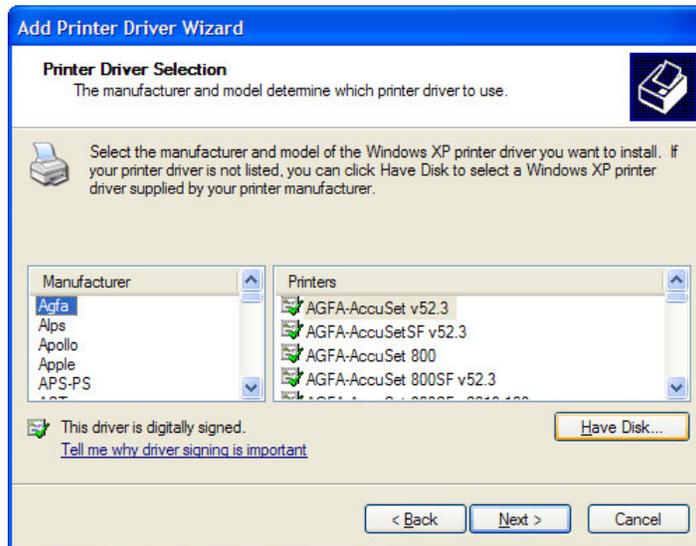
From the Start menu in Windows, choose “Printers and Faxes” to open the “Printer and Faxes” window. Select “Server Properties” from the File menu in XP; in Vista and newer, first choose an existing printer to get a Print server properties to show in the task bar.



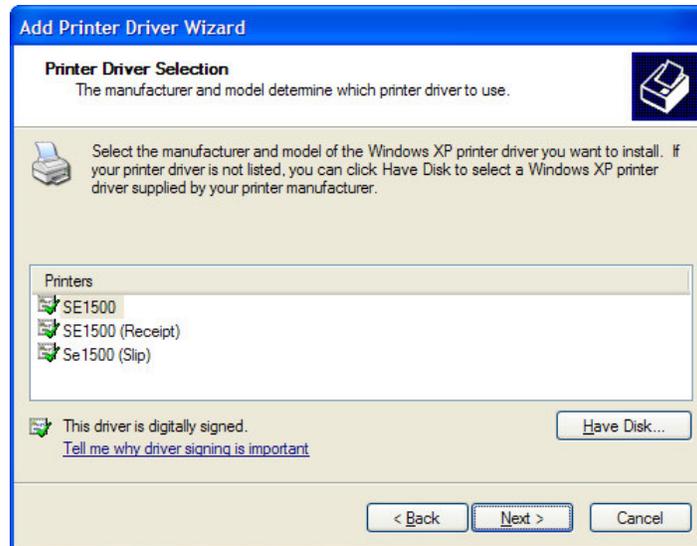
Under the “Drivers” tab, click the “Add...” button.



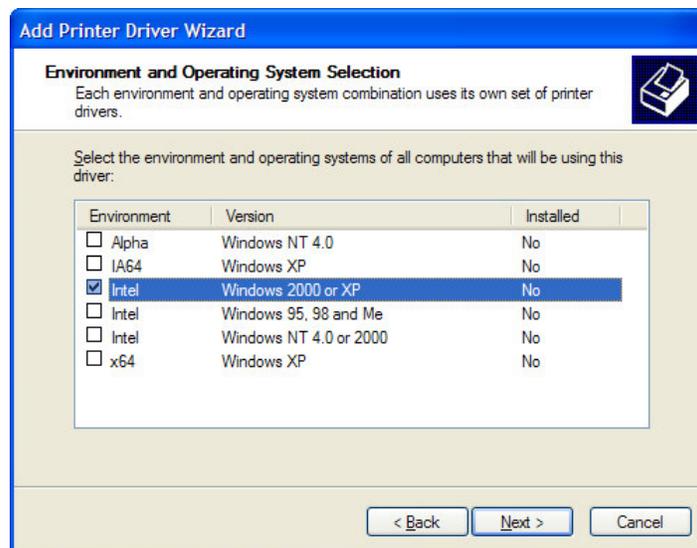
Click on the “Next” button on “Welcome to the Add Printer Driver Wizard” screen. Then click the “Have Disk...” button and locate the INF file of the Windows driver for your Transact printer.



Some Transact printers may have the options such as for receipt, slip-only, etc. Select the desired option if you are prompted by the Add Printer Driver Wizard. Click on the “Next” button.



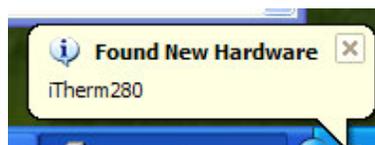
On the next screen, select the Windows version running on the host PC. The most used version of Transact Windows driver supports the 32-bit (i.e. the “Intel” environment listed on this screen). Select your CPU hardware type and click on the “Next” button.



On the “Completing Add Printer Driver Wizard” screen, verify the printer driver selected and click on the “Finish” button to complete the installation.

5.2. Add USB and Parallel Printers when driver is already installed

To add a USB or parallel printer, simply connect the printer to the host PC. Windows Plug and Play should find the Transact Windows printer driver installed in the system (See section 5.1, 2.3) and add the printer on the host PC automatically without further user intervention.



If the driver you intend to install does not have a signing file [print driver name].CAT that is acceptable for your OS version, then instead of the automatic install depicted in section 2.2, the found hardware wizard will require affirmation of acceptance of the driver as unsigned and may also require pointing to the DLL file in the CPU hardware type installation directory.

6. Roll-out hints

6.1. Driver Install script info

The following requires knowing the name of the port that will be used for a printer; in the case of physical PC ports such as COM1 these names are static, but for a USB connected printer, one must first connect the printer (at which time Windows plug-n-play will install the lower level Microsoft usbprint.sys driver and create the port, starting with USB001). When developing a script, you can find the port number created by executing the USBPortView utility that is supplied in the Utilities section of the Transact install package.

Here is an example for installing two IJet drivers for a 1500 printer on the same port:

Basically, both drivers are installed the same way.

- 1.) Run the below script first to load the receipt printer, SE1500:

```
rundll32 printui.dll,PrintUIEntry /if /b "SE1500" /f "C:\IJet\TactIJet.INF" /r  
"USB001" /m "SE1500" /z
```

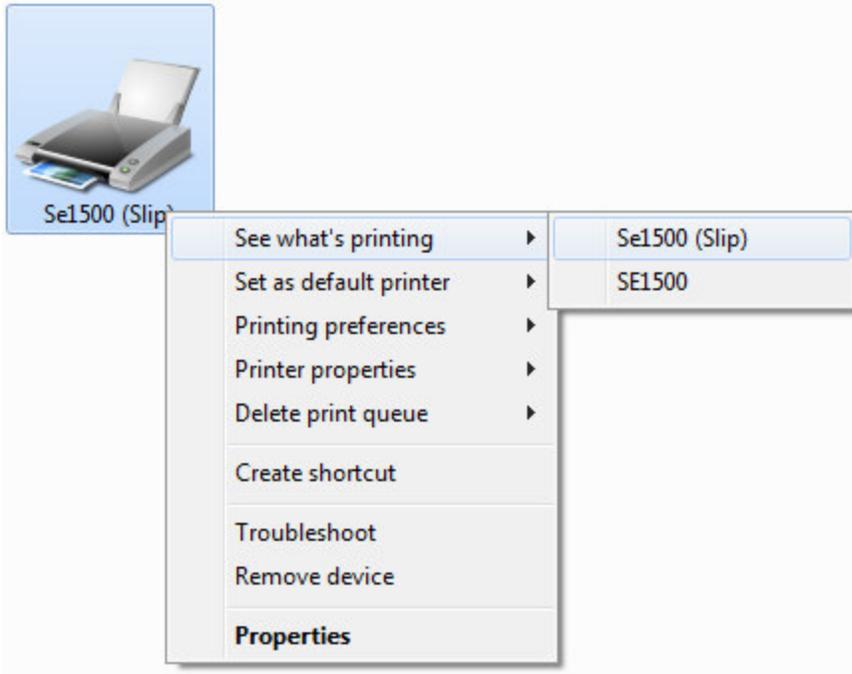
- 2.) Then run this script to load the second SE1500 (Slip) driver:

```
rundll32 printui.dll,PrintUIEntry /if /b "Se1500 (Slip)" /f "C:\IJetSlip\TactIJetSlip.INF"  
/r "USB001" /m "Se1500 (Slip)" /z
```

However, please note, Windows 7 will list the printers under one icon. This is a Windows 7 "feature".

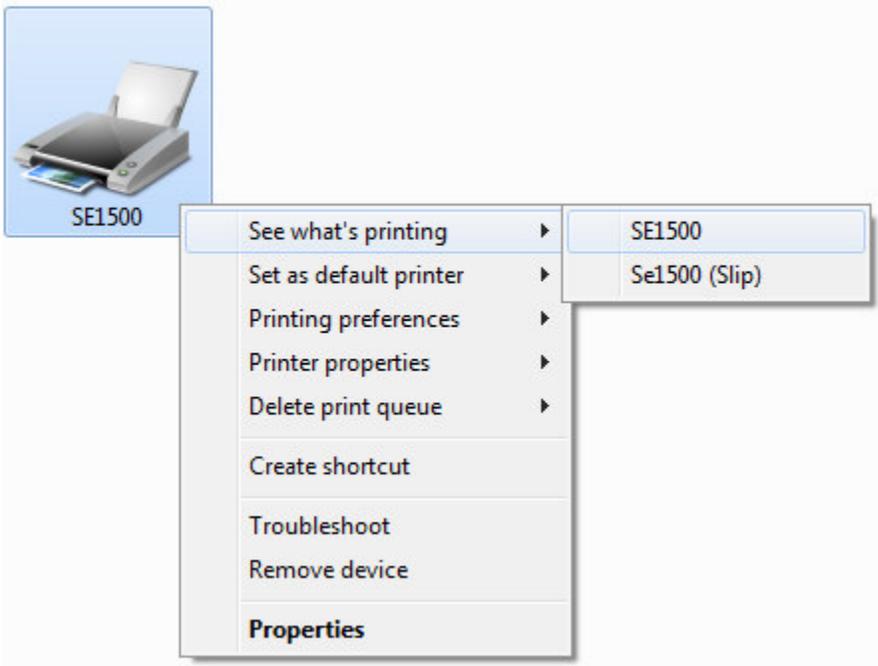
Both drivers are there and available to applications, but are only listed as one single icon under Printers and Faxes in Devices and Printers.

So, after running the above two scripts, if you right click on the driver icon, select any option, and you will see that the two drivers are loaded and available.



This does not affect applications. Applications will still list them separately. This is just how Windows 7 lists printers of the same driver in Devices and Printer.

Also, if you load them in reverse order, Loading the SE1500 (Slip) first and then the SE1500, the SE1500 will be the label of the Icon in the Printers and faxes list.



--Apparently, the last loaded driver becomes the label of the icon.

6.2. Setting Transact Printer Properties

A new utility “TransactPrinterProperties” was added when the version 3.0.2.0 Windows drivers were released. That utility allows customers to set either default properties (such as the one set below) or individual printer properties. This is because for most users Windows 7 does not provide an easy way to temporarily gain administrative mode when attempting to set printer properties from its spooler GUI interface. When a printer is installed, a group of Transact properties are set to default coded values in the registry held under the Transact Language Monitor key. Until the time that an individual installed printer’s Transact properties are changed, the default values are used for that printer. When any named printer property change is saved, the utility will make a copy of all the shown values and save them in the registry under the printer name key (the utility must be running in administrative mode for this to succeed).

During the running of print jobs, the named printer applicable registry values are first used if present, else the current default values are used. One can revert (actually delete all of) a named printer’s Transact properties back to use the defaults by pressing the Reset Printer To Defaults button. To run this utility with administrator privileges, right click when launching it. The utility starts with a printer name “<default>” which brings up the current values of defaults and allows changing them, affecting all printers that don’t have a unique set under their printer name. Entry of the name of an installed printer in the Printer Name text box will bring out the property values in current use for that printer. Changing any one of them will enable the Saves Changes button, and if that is pressed, individual printer values will be written under the named printer’s registry key. These have operational precedence over the default values that exist under the Transact Language monitor key.

Any named printer can only have one set of property values, but there is no restriction on the number of different name printers sharing the same physical port – it is then up to the installer(s) to set desired default and per printer Transact property values and later the application(s) to coordinate the sending of print jobs to these printers.

Setting values for Transact properties can be done via the GUI utility as explained above, or scripts can be constructed and run in administrative mode. The standard cautions about making registry changes and testing these, especially within scripts, apply here.

The default Transact settings, which are reset to coded values every time a new Transact printer is installed, are held in the registry key:

```
HKLM\SYSTEM\CurrentControlSet\Control\Print\Monitors\TransactLM
```

The per printer settings are held in the registry key (substitute in the printer name):

```
HKLM\SYSTEM\CurrentControlSet\Control\Print\Printers<printer name>\PrinterDriverData
```

A common way to create a new script is to first use the utility to make changes, then run regedit in administrative mode and export the key that contains the desired values. Note that this export will write a text file using Unicode (double byte) characters. One can use Notepad to open the exported text file and choose to save it as ASCII, the format necessary for the value setting script command: regsvr32 <name of .reg file>

Here is an example setting of values of interest in PrintDriverData – the exported fields that the Transact driver does not own have been deleted; these are likely used by the Windows spooler:

```
Windows Registry Editor Version 5.00
```

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Print\Printers\SE1580 (Receipt)\PrinterDriverData]
"EndOfDocLineFeeds"=dword:00000000
"StartDocString"=""
"StartPageString"=""
"EndDocString"="[ESC]d<9>&%URLogo&[ESC]v"
"SkipFirstStartPage"="YES"
"EndOfDocKnifeCut"="NO"
"CashDrawer1"="NO"
"CashDrawer2"="NO"
```

[END]