INTELLIscribe 4.2

Broadcast, fail-over and secure LPR printing for Windows

Administrator's Guide and Support Reference

Version 4.2 · Brooks Internet Software, Inc.

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Part I · Administrator's Guide

1 Introduction

INTELLIscribe adds a new kind of printer port to Windows. A Windows printer that uses an INTELLIscribe port prints like any other printer: applications print to it as usual, and its driver produces the document in the printer's language (PCL, PostScript and so on). Instead of sending the result to one printer, the port hands it to the INTELLIscribe service, which sends it over TCP/IP to one or more **destinations** — network printers, print servers or host systems — using the LPR/LPD or HP JetDirect protocol.

What happens next depends on the port's **policy**:

- **Broadcast** sends every job to all of the port's destinations at once: print a script once, and it comes out on eight printers.
- **Failover** sends each job to the first destination, and moves on to the next one if it fails.
- **Round Robin** sends jobs to the destinations in turn.
- **Destination balancing** sends each job to the destination that has received the fewest bytes so far.

Every job is kept, so it can be reprinted later — to the same destinations, or to one you pick — without opening the application that printed it. Printer-ready files can be dragged onto a port, or sent from the command line with ISendFile.

INTELLIscribe can also send LPD jobs **encrypted with TLS**, to servers that support LPD over TLS such as Brooks RPM Remote Print Manager (chapter 7).

1.1 How a job flows

1. An application prints to a Windows printer whose port is an INTELLIscribe port. The printer's driver produces the job in the printer's language.
2. The Windows print spooler passes the job to the INTELLIscribe port monitor, which gives it to the INTELLIscribe service. The service saves it in its spool folder and lists it under the port.
3. The port's policy picks the destination or destinations. The service connects to each one and sends the job, using that destination's protocol and settings.
4. The job's outcome — done, error, retry — appears in the INTELLIscribe window and in the log. A job that failed can be reprinted from there.

INTELLIscribe doesn't change the job: what the printer receives is what the Windows driver produced. When a port has more than one destination, they must all understand that printer language — for example, all PCL printers, or all PostScript printers.

1.2 What's new in version 4.2

- **64-bit, for current Windows.** INTELLIscribe 4.2 is a 64-bit (x64) program for Windows 10 and 11 and Windows Server 2016 and later.

- **LPD over TLS.** LPD destinations can encrypt jobs with TLS 1.2 or 1.3, on the destination's usual port (515), and can trust a server by its certificate fingerprint (chapter 7).
- **A locked-down service.** The INTELLIscribe service runs under its own low-privilege account, NT SERVICE\INTELLIscribe, instead of LocalSystem, and starts automatically (delayed start) with Windows. Only administrators can change the configuration (chapter 13).
- **Printers travel with the configuration.** File > Export Configuration saves the Windows printers on INTELLIscribe ports along with the ports, and Import Configuration creates them again (chapter 11).
- **A PowerShell module.** Create ports, destinations and printers, and export or import the configuration, from PowerShell (11.4).
- **Export as a script.** Export Configuration can write a PowerShell script that recreates the configuration (11.2).
- **Status bar.** The status bar shows whether the INTELLIscribe service is running and the license status, and updates as soon as either changes (4.6).
- **Job Properties** shows a job's details in groups, and copies them to the clipboard (8.4).
- **Check for Updates.** INTELLIscribe tells you when a newer version is available (4.8).
- **This manual** replaces the old help file: Help > Manual opens it.
- **Removed:** the system tray icon, the splash screen, and the import of registry-format (.reg) configuration files from versions before 3.0. Configuration, job history, logs and spool files are now kept under ProgramData (chapter 14).

2 Installation

2.1 Requirements

Item	Requirement
Windows	Windows 10 or 11, or Windows Server 2016 or later; 64-bit (x64) only
Rights	An administrator account to install and to configure. INTELLIscribe runs as a Windows service; no one needs to be logged on for it to print.
Network	TCP/IP from the INTELLIscribe computer to each destination: port 515 for LPR/LPD, 9100 for JetDirect, unless the destination uses another
Printer drivers	A type 3 Windows driver for each printer you print to through INTELLIscribe. Type 4 and class drivers can't be used (2.2).
Windows protected print mode	Off (2.3)
Disk	Jobs are kept in the spool folder until the job deletion options remove them (9.2). Allow for the jobs you want to keep.

2.2 Printer drivers

A printer on an INTELLIscribe port needs a **type 3** Windows driver. Windows won't use a type 4 driver, or one of Microsoft's class drivers, with a port monitor that isn't Microsoft's own, and INTELLIscribe's port monitor isn't. This is a Windows rule, and it applies to every printing product with its own port, not only to INTELLIscribe. Choosing such a driver for a printer on an INTELLIscribe port fails, usually with a message that doesn't give the reason, such as *Unable to install printer*, *The printer name is invalid* or *This operation is not supported*.

Drivers that can't be used include:

- any driver whose name ends in **Class Driver**, such as *Microsoft PCL6 Class Driver*, *Microsoft PS Class Driver* and the printer makers' class drivers, for example *HP LaserJet 2300L PS Class Driver*;
- *Microsoft IPP Class Driver*, and the drivers Windows picks by itself when it finds a printer on the network;
- other type 4 drivers, which don't always say so in their name.

To see a driver's type, run this in PowerShell; *MajorVersion* is 3 or 4:

```
Get-PrinterDriver | Sort-Object MajorVersion, Name | Format-Table Name, MajorVersion
```

Type 3 drivers come from the printer maker's website, often as a PCL6 or "universal" driver that works across their printers, such as the HP Universal Print Driver, Xerox Global Print Driver or Canon Generic PCL6 Driver. In the Add Printer wizard, **Windows Update** lists more.

INTELLIscribe Setup also installs **INTELLIscribe Generic PCL6**, a type 3 driver for printers that understand PCL6 (also called PCL XL), which most office laser printers and copiers do. It prints in black and white or color at 300 or 600 dpi, on the common paper sizes, from up to three trays, and in duplex. Use it when the printer's maker has no type 3 driver, or when the printers behind an INTELLIscribe port are of different makes; for features such as stapling or a printer's own fonts, use the maker's driver. INTELLIscribe also uses it as the stand-in when it can't install a printer's own driver (11.3). *Generic / Text Only*, which comes with Windows, is type 3 too, but prints only plain text; INTELLIscribe falls back on it if INTELLIscribe Generic PCL6 isn't installed.

2.3 Windows protected print mode

Windows protected print mode is a Windows 11 setting that stops Windows from loading any printer driver or port monitor that isn't Microsoft's, and prints only to printers it can reach directly over IPP. INTELLIscribe can't work while it's on: Windows doesn't load INTELLIscribe's port monitor, so INTELLIscribe ports aren't offered for printers and printers on them don't print.

To turn it off:

1. In Windows Settings, open **Bluetooth & devices > Printers & scanners**.
2. Under **Printer preferences**, find **Windows protected print mode** and choose **Turn off**, then **Yes**.

If the setting can't be changed there, your organization sets it by policy, and whoever manages your computers must turn it off: in Group Policy it is **Computer Configuration > Administrative Templates > Printers > Configure Windows protected print**, set to Disabled or Not Configured, or the same setting in Intune.

Turning the mode on removes the printers that use non-Microsoft drivers and deletes those drivers, and turning it off doesn't bring them back. After turning it off, install the printers' drivers and create the printers again; an INTELLIscribe export (11.1) recreates them in one step. If INTELLIscribe ports still aren't offered, run INTELLIscribe Setup again with the Print Spooler running.

Microsoft has said it intends to make protected print mode the default in a future version of Windows. If INTELLIscribe stops printing after a Windows update, check this setting first.

2.4 Installing

1. Log on to Windows as an administrator and run the setup program.
2. Read the license agreement; to continue, accept it.
3. Choose the installation folder and Start menu folder, and whether to add a desktop icon.
4. Setup installs the files, registers the INTELLIscribe port monitor with the Windows print spooler, and installs and starts the INTELLIscribe service.
5. On the last page, leave **Run INTELLIscribe** selected to open the program.

Setup installs the Visual C++ runtime if it isn't already installed. Registering the port monitor needs the Print Spooler service running; if it isn't, Setup says so — start the Print Spooler and run Setup again.

2.5 Upgrading

Help > Check for Updates tells you when a newer version is available and links to it (4.8). Run the new setup program over the installed version. Setup closes the INTELLIscribe window and stops the service, replaces the files and starts the service again. Ports, destinations, settings and job history are kept. If an earlier version kept its job database, logs and spool files in the installation folder, the service moves them to ProgramData the first time it starts (chapter 14).

To install an older version over a newer one, uninstall the newer version first.

2.6 The INTELLIscribe service

The service, **INTELLIscribe** (IServ.exe), does the printing: it receives jobs from the port monitor, keeps the job list and log, and sends jobs to their destinations. The INTELLIscribe window only shows and changes what the service is doing; closing the window does not stop printing.

The service starts automatically with Windows, a little after the other automatic services (Automatic, Delayed Start). Jobs printed in the meantime wait in the Windows print queue until it's running. The service runs as **NT SERVICE\INTELLIscribe**, an account Windows creates for it, with no administrator rights (13.1).

To stop or start the service, use Services (services.msc), or from an administrator command prompt:

```
net stop INTELLIscribe
net start INTELLIscribe
```

The status bar in the INTELLIscribe window shows a green icon while the service is running, and a red one while it isn't.

2.7 Firewall

INTELLIscribe only makes outgoing connections, which Windows Firewall allows by default; it doesn't listen on any port, so there is no inbound rule to add. A firewall between INTELLIscribe and a destination must allow TCP to the destination's port.

LPD's port restriction setting (6.1) can make INTELLIscribe connect *from* a port below 1024; some firewalls and network policies treat these differently.

2.8 Licensing

INTELLIscribe runs as a fully working trial until the trial period ends. To buy a license, or to unlock INTELLIscribe with one, choose **Help > License** to open the Brooks License Manager. The License Manager is also in the INTELLIscribe Start menu folder.

The status bar shows the license: who it's licensed to and the serial number, or the trial days remaining. It updates when you close the License Manager. When the trial has ended and INTELLIscribe isn't licensed, jobs aren't sent to destinations, and INTELLIscribe opens the License Manager when it starts.

2.9 Uninstalling

Uninstall INTELLIscribe from Settings > Apps (or Programs and Features). Uninstalling removes the program, the service, the port monitor and **all of INTELLIscribe's configuration**: ports, destinations, settings, job history, spool files and logs. Windows printers that used INTELLIscribe ports remain, but can't print until they're given another port.

To keep the configuration, export it first (File > Export Configuration, 11.1), then import it after installing again.

3 Quick Start

Printing through INTELLIscribe takes two steps: create an INTELLIscribe port, and create (or change) a Windows printer to use it.

Create a port

1. Open INTELLIscribe from the Start menu. It asks for administrator rights.
2. Choose **Port > Add**. The Virtual Printer Port Wizard opens.
3. **Configure Port:** enter a name for the port, for example *Newsroom Scripts*, and choose a policy (5.2). With one destination, the policy doesn't matter.
4. **Add Destinations:** enter the printer's host name or IP address, choose the protocol — LPR/LPD, or JetDirect for printers that receive on port 9100 — and click **Add**. Add as many destinations as you need, and use **Up** and **Down** to set their order.
5. **Configure Settings:** check each destination's settings. For LPD, the **Queue name** must be a queue the printer or server has; *raw* works on most network printers. The defaults are right for most printers.
6. Click **Finish**.

Create a printer

1. In Windows Settings, open **Bluetooth & devices > Printers & scanners** and choose **Add device**, then **Add manually** (on older versions, *The printer that I want isn't listed*).
2. Choose **Add a local printer or network printer with manual settings**.
3. Choose **Use an existing port** and pick the INTELLIscribe port you created.
4. Choose the printer's driver, give the printer a name, and finish the wizard. Print a test page. The driver must be a type 3 driver; a class driver or other type 4 driver makes the wizard fail (2.2). If you don't have a type 3 driver for the printer, choose **INTELLIscribe Generic PCL6** (under the manufacturer **Brooks Internet Software**), which works with most PCL6 laser printers.

To move an existing printer to INTELLIscribe instead, open its **Printer properties**, and on the **Ports** tab check the INTELLIscribe port.

The test page appears in the INTELLIscribe window under the port, and its progress in the log. If it doesn't print, see chapter 15.

You can also create the port and printer from PowerShell in one go (11.4):

```
New-IScribePort 'Newsroom Scripts' printer1.example.com -LpdQueue raw
New-IScribePrinter 'Newsroom Scripts' 'Newsroom Scripts' -DriverName 'HP Universal
Printing PCL 6'
```

4 The INTELLIscribe Window

INTELLIscribe always runs as an administrator, so Windows asks for administrator rights when you open it. The window shows the ports on the left. On the right are three tabs: **Print Jobs** and **Destinations** for the selected port, and **Log**.

Closing or minimizing the window doesn't affect printing. If a job is waiting for you — an SLP port asking which printer to use (Appendix A) — the window's taskbar button flashes.

4.1 Ports

The port list shows every INTELLIscribe port. Select a port to see its jobs and destinations. Right-click a port for the Port menu: **Add**, **Update** and **Delete** (chapter 5).

You can drag printer-ready files from File Explorer onto a port to print them, and drag a job from the Print Jobs tab onto another port to print it there (8.3).

4.2 Print Jobs

The Print Jobs tab lists the selected port's jobs: the job number, the document name, and when the job was received, scheduled and completed. The icon beside each job shows its status (8.1). Select several jobs with Shift+click and Ctrl+click. Right-click for the Job menu: **Cancel**, **Delete**, **Reprint** and **Properties** (chapter 8).

Print selected jobs to lists the port's destinations. Choosing one reprints the selected jobs to that destination only, whatever the port's policy.

4.3 Destinations

The Destinations tab lists the selected port's destinations in order, with each one's address, protocol, port and status:

Icon status	Meaning
Unknown	Nothing has been sent to the destination yet
Available	The last job or status query succeeded
Busy	The destination is busy or not responding
Testing	A status query is running
Error	The last attempt failed; see the log

Query Status asks the selected destination for its status — an LPD queue listing, or the JetDirect information chosen in its settings (6.2) — and shows the answer, which you can copy. **Update** opens the wizard at the Add Destinations page.

4.4 Log

The Log tab shows today's log: each message's time, severity (information, warning or error), source and text. INTELLIscribe logs its startup, each job's progress, and every connection problem with the reason. When a job doesn't print, look here first.

Log > Open Log opens an earlier day's log, **Today's Log** returns to today's, and **Refresh** reloads it. Logs are CSV files, one per day, in the log folder (9.1), so you can also open them in Excel. How much is logged is set by **Log detail** in View > Options (9.1), and can be raised for a single destination (6.3).

4.5 Menus

Menu	Command	What it does
File	Export Configuration...	Save the ports, destinations and printers as XML, or as a PowerShell script (11.1)
	Import Configuration...	Add the ports, destinations and printers from an exported file (11.3)
	Exit	Close the window. Printing continues.
Port	Add...	Create a port with the Virtual Printer Port Wizard (5.1)
	Update...	Change the selected port in the wizard
	Delete	Delete one or more ports (5.4)
Job	Cancel	Stop the selected jobs from printing (8.2)
	Delete	Remove the selected jobs and their files
	Reprint	Send the selected jobs again
	Properties...	Show the selected job's details (8.4)
Destination	Query Status...	Ask the selected destination for its status
	Update	Open the wizard at the Add Destinations page
	Set as default	SLP ports only: always use this destination (Appendix A)
	Attributes	SLP ports only: show what the printer advertises
Log	Open Log..., Today's Log, Refresh	Choose and reload the log shown (4.4)
View	Toolbar, Status Bar	Show or hide them
	Options...	Global options: logging, jobs, spool folder (chapter 9)

Menu	Command	What it does
Help	Manual	Open this manual
	Check for Updates...	See whether a newer version is available (4.8)
	License...	Open the Brooks License Manager (2.8)
	About...	Version, license and the version of each installed file

The toolbar has buttons for Cancel, Delete, Reprint and Properties, the License Manager and About.

4.6 Status bar

The status bar shows, from left to right:

- what the command under the mouse does;
- while a configuration is being imported, its progress;
- the license: *Licensed to* the licensee and serial number, *Trial license: N days remaining*, or *Not licensed*. Point at it for details;
- the service icon: green while the INTELLIscribe service is running, red while it's stopped. Point at it for the service's state.

The status bar updates when the service starts or stops and when the License Manager closes; it doesn't need refreshing.

4.7 About

Help > About shows the license, the version of each INTELLIscribe file, and how to reach support. Files not signed by Brooks Internet Software are marked; after an upgrade, every file should show the same version. When you contact support, include what this dialog shows. **Legal Notices** shows the notices and licenses of the third-party software INTELLIscribe includes.

4.8 Check for Updates

Help > Check for Updates shows the installed version and the current release from the Brooks website, and a preview release when one is newer. Click a version to download its setup program, then run it to upgrade (2.5); right-click to copy the link instead.

INTELLIscribe also checks when it starts and opens this dialog if a newer version is available. If you're running a preview, newer previews count too. To stop the check, clear **Check for updates on startup**. The check needs Internet access to www.brooksnet.com; without it, nothing is shown at startup, and the dialog links to the website instead.

5 Ports and Policies

An INTELLIscribe port is what a Windows printer prints to. Each port has a name, a policy and a list of destinations. Ports are created and changed with the **Virtual Printer Port Wizard**, which you can open from INTELLIscribe (Port > Add or Update) or from Windows' printer properties (Ports tab > Add Port > INTELLIscribe Virtual Port, or Configure Port). Either way, you must be an administrator.

5.1 The Virtual Printer Port Wizard

Page	What you do
Welcome	Nothing; click Next
Add or Update	Opened from Windows only: create a new port, or pick an existing one to change
Configure Port	Enter the port's name and choose its policy
Add Destinations	Add, remove and order the destinations (chapter 6)
Configure Settings	Set each destination's protocol settings
Completion	Click Finish to save the port

The port name is the name Windows shows in the printer's Ports list. It must be unique, and can contain spaces; something descriptive such as *Office Laser* or *Warehouse Labels*, of 32 characters or fewer, works best. A port's name can't be changed once it's created.

Clicking **Finish** saves the port and tells the Windows print spooler about it, so it can be chosen for a printer right away. Clicking **Cancel** on any page discards the changes.

5.2 Policies

A port's policy decides which destination or destinations each job is sent to, and what happens when a destination fails. With one destination, all policies behave the same.

Policy	Each job goes to	When a destination fails
Failover	The first destination in the list	The job is sent to the next destination, and so on down the list
Broadcast	Every destination, at the same time	That destination's copy is retried (9.2); the others are unaffected
Round Robin	The next destination in turn	The job is sent to the next destination
Destination balancing	The destination that has been sent the fewest bytes	The job is sent to another destination

Policy	Each job goes to	When a destination fails
SLP	A printer found on the network (Appendix A)	—

Each destination receives one job at a time; jobs for a busy destination wait their turn. A destination that fails is tried again the number of times set in **Retry job** (9.2) before the job, or that copy of it, is marked as an error.

Examples. Newsrooms broadcast scripts from iNEWS or ENPS to several printers at once, often loaded with different colored paper. Offices with several sites broadcast reports to every site. Warehouses use failover so that pick lists print even when a printer is down. Round robin and destination balancing spread a heavy load across several inexpensive printers.

5.3 Changing a port

Select the port and choose Port > Update. You can change the policy and the destinations and their settings; the name stays. Changes apply to jobs printed afterwards. Destination > Update opens the wizard directly at the Add Destinations page.

5.4 Deleting a port

Port > Delete opens the Delete Port dialog, where you can select one or more ports. Deleting a port deletes its destinations and all of its jobs; jobs that are printing are cancelled first. Windows printers that used the port are moved to the FILE: port. There is no undo — export the configuration first if you might want it back.

A port can also be deleted from Windows' printer properties (Ports tab > Delete Port).

6 Destinations

A destination is a printer, print server or host that INTELLIscribe sends jobs to. It's defined by:

- **Address:** the host name or IP address.
- **Protocol: LPR/LPD** (RFC 1179), which almost all network printers and print servers, and UNIX, Linux, IBM i and mainframe systems, support; or **JetDirect** (raw TCP, also called socket or port 9100 printing), for printers and print servers that receive raw data.
- **Port:** the TCP port. The wizard fills in 515 for LPR/LPD and 9100 for JetDirect; change it only if the destination uses another. A JetDirect box with several printer ports uses 9100, 9101, 9102 and so on.
- **Settings** for the protocol, below.

A port can't have two destinations with the same address and port. On the Add Destinations page, **Up** and **Down** set the order, which matters for the Failover and Round Robin policies, and **Delete** removes the selected destination. A port needs at least one destination (except an SLP port).

Try the default settings first. Most printers need nothing changed except, for LPD, the queue name.

6.1 LPR/LPD settings

Setting	Default	What it does
Queue name	raw	**Required.** The queue on the LPD server. Network printers usually accept *raw* or *lp*; see the printer's documentation. For a host system, the name of its printer queue.
Copies	1	How many copies the server prints
Port restriction	Relaxed	Which local port INTELLIscribe connects from. **Relaxed:** any. **Standard:** a port below 1024. **Strict:** 721–731, as RFC 1179 requires; some UNIX servers insist on it. Strict allows only 11 connections at once.
Print Banner	No	Ask the server to print a banner (separator) page before the job
Indent count	(none)	Left margin, in columns, for text formats
Email address	(none)	Ask the server to email this address when the job has printed (if it supports it)
Page width	(none)	Line width, in columns, for text formats
Banner class	(none)	The class printed on the banner page

Setting	Default	What it does
Print format	preformatted	How the server treats the data. **preformatted** (the *l* command) sends the job untouched and is right for printer-language data. Others: postscript, formatted (*f*, text with paging), pr, fortran, cif, dvi, plot, ditroff, troff, raster.
Name	Default	The document name the server is told: the job's own name (Default), or its job name or title instead
Job	Default	The job name on the banner page: Default, or the document name (Source) or title
Title	Default	The title: Default, or the job name or document name (Source)
Reverse order	No	Send the data file before the control file. Some servers need this.
Control file ack	Yes	Wait for the server to acknowledge the control file
Data file ack	Yes	Wait for the server to acknowledge the data file
Ignore final ack	Yes	Treat the job as sent without waiting for the server's final acknowledgment. Turn off to have a server error mark the job failed.
Timeout	120	Seconds to wait for the server before giving up on the attempt
Lpd status (Query Status)	Short	Short or long queue listing for Query Status
Log Detail (Log Options)	Use Global	Log this destination at a different level from the global setting (6.3)
Use TLS encryption (Security)	No	Send the job over TLS (chapter 7)
Allow untrusted certificate (Security)	No	Accept a certificate Windows doesn't trust (chapter 7)
Server certificate fingerprint (Security)	(none)	Trust the server by its SHA-256 fingerprint (chapter 7)

6.2 JetDirect settings

Setting	Default	What it does
Print Banner	No	Send a PCL banner page before the job. Only for PCL printers.

Setting	Default	What it does
Copies	1	How many times the job is sent
Solicit Device Status	No	Ask the printer for its status (PJL) while printing, and log it
Solicit Job Status	No	Ask for the job's status while printing
Solicit Page Status	No	Ask for each page's status while printing
Timeout	120	Seconds to wait for the printer before giving up on the attempt
Query Status: ID, Status, Config, Filesystem, Memory, Page, Variable, USTATUS	ID and Status	What Query Status asks the printer for, with PJL INFO commands: its model, status, configuration, file system, memory, page count, variables and unsolicited status variables
Log Detail (Log Options)	Use Global	Log this destination at a different level (6.3)

The Solicit and Query Status settings use PJL, which most PCL and PostScript laser printers understand. A printer or print server that doesn't simply doesn't answer; turn them off if they cause problems.

6.3 Logging one destination in detail

Each destination's **Log Detail** is *Use Global* unless you change it. Set it to **High** to log one problem destination in full — every connection, command and acknowledgment, and for TLS the protocol version, cipher and certificate — without filling the log with detail from all the others. Set it to **None** to log nothing for a destination.

7 LPD over TLS

Standard LPD sends jobs, and the names of their users and documents, unencrypted. With **Use TLS encryption** on, an LPR/LPD destination encrypts the whole conversation with TLS. INTELLIscribe uses Windows' own TLS (Schannel), with TLS 1.3 or 1.2; older versions are never used.

TLS starts as soon as the connection is made, on the destination's usual port — normally 515 — and LPD then runs as usual inside it. The server needs to support LPD over TLS: Brooks RPM Remote Print Manager does, on the same port as its plain LPD, and tells the two apart by the first byte it receives. INTELLIscribe offers the TLS application protocol name (ALPN) *lpd*. The method is described in the Internet-Draft *draft-powell-lpd-tls*, LPD over TLS.

If the server doesn't answer with TLS — most often because it doesn't support it — the job fails and the log says the server didn't respond with TLS. INTELLIscribe never falls back to sending the job unencrypted.

7.1 Trusting the server

Before sending anything, INTELLIscribe checks the server's certificate in one of three ways:

1. A trusted certificate (the default). The certificate must be valid, chain to a certificate authority that Windows trusts, and name the server: the destination's address must be a host name in the certificate, or, if you entered an IP address, an IP address in the certificate. The server must send its intermediate certificates; INTELLIscribe doesn't fetch them, or check revocation, over the network. Use this when the server has a certificate from your organization's certificate authority or a public one.

2. A fingerprint. Enter the SHA-256 fingerprint of the server's certificate, or of its public key, in **Server certificate fingerprint**. Then that fingerprint alone decides: the certificate is accepted if it matches, whoever issued it and whatever name it has, and rejected otherwise. This is the way to trust a server with a self-signed certificate, and it keeps working when the server's address changes. Fingerprints are 64 hexadecimal digits; colons, spaces and dashes between them are ignored, so you can paste one in any common format:

```
3F:A1:...:9C
3fa1...9c
```

To allow for a certificate change, enter both the old and new fingerprints, separated by a comma or semicolon; either is accepted. Pinning the **public key** fingerprint keeps working when the server renews its certificate with the same key.

3. Any certificate. With **Allow untrusted certificate** on and no fingerprint, any certificate is accepted. The job is still encrypted, but someone who can intercept the connection could pose as the server. INTELLIscribe logs a warning each time, with the certificate's fingerprints, so you can switch to a fingerprint. Use this only to get started or to test.

7.2 Finding the fingerprint

- **From RPM:** RPM shows its certificate's SHA-256 fingerprint in its TLS settings.
- **From INTELLIscribe's log:** turn on **Allow untrusted certificate** and print a test page. The warning in the log gives the server's certificate and public key SHA-256 fingerprints. Check them with the server's administrator, copy one into **Server certificate fingerprint**, and turn **Allow untrusted certificate** off again.
- **From a mismatch:** when a fingerprint doesn't match, the job fails and the log gives the fingerprints the server presented.

7.3 Problems

Log message	Cause and fix
The server didn't respond with TLS	The server doesn't support LPD over TLS on that port, or TLS isn't turned on there
Certificate does not match the configured fingerprint	The server's certificate changed, or this isn't the server you expect. Compare the fingerprints in the log with the server's.
Untrusted root / certificate chain	The certificate authority isn't trusted by Windows, or the server didn't send its intermediates. Install the CA certificate in the computer's Trusted Root store, or use a fingerprint.
Name doesn't match (CN_NO_MATCH)	The address in the destination isn't in the certificate. Use the name the certificate has, or a fingerprint.

Set the destination's Log Detail to High (6.3) to log the TLS version, cipher and ALPN negotiated for each job.

8 Jobs

INTELLIscribe keeps every job it receives, with its file, until the job deletion options remove it (9.2). That's what makes reprinting possible.

8.1 Job status

Status	Meaning
Unknown	Received, not yet processed
Waiting	Waiting to be scheduled
Submitted	Scheduled, waiting for its destination
Printing	Being sent
Done	Sent successfully
Retry	A destination failed; the job will be tried again (9.2)
Error	Couldn't be sent; the log says why. Reprint it when the problem is fixed.
Canceled	Canceled by a user
Deleted	Being removed

With Broadcast, a job is Done when every destination has it.

8.2 Cancel, delete and reprint

- **Cancel** stops the selected jobs. A job that's being sent stops; whether the destination prints what it already received depends on the destination.
- **Delete** removes the selected jobs and their files. A job that's printing must finish or be canceled first.
- **Reprint** sends the selected jobs again, following the port's policy — whether they printed, failed or were canceled. The application that printed them isn't needed.
- **Print selected jobs to** (on the Print Jobs tab) reprints them to the one destination you choose, regardless of the policy — for example, only to the printer that failed.

8.3 Drag and drop

Drag a printer-ready file (one already in the printer's language, such as a .prn or .ps file) from File Explorer onto a port to print it there, without an application or driver. Drag a job from the Print Jobs tab onto another port to send it through that port's destinations, for example to broadcast a script to a second set of printers.

You can also drag a job out of INTELLIscribe into another program — into Notepad to look at it, or into an email to send it to support.

8.4 Job Properties

Job > Properties (or double-click a job) shows its details in three groups:

- **Job:** the job number, status, port, Windows printer and copies;
- **Document:** the document name, the user and computer that printed it, and the job's file in the spool folder;
- **Times:** when it was received, scheduled and completed.

The window can be resized. Select rows and press Ctrl+C to copy them (Ctrl+A selects all), for an email or a support case.

8.5 Failure notification

With **Enable automatic failure notification** on (9.1), INTELLIscribe shows a message when a job fails at a destination, saying whether it was sent to another destination instead. The message appears only while the INTELLIscribe window is open; failures are always logged.

9 Global Options

View > Options sets options that apply to all ports. Only administrators can change them.

9.1 General

Option	What it does
Log detail	None, Low or High. High logs each connection in detail. A destination can override this (6.3).
Remove log files older than _ days	Logs older than this are deleted
Log directory	Where logs are kept. Default: ProgramData\Brooks Internet Software\INTELLIscribe\Logfiles. Must be on a local fixed drive.
Enable automatic failure notification	Show a message when a job fails (8.5)

9.2 Job Options

Option	What it does
Delete jobs after they are printed	Remove each job as soon as it's done. Jobs can't then be reprinted.
Delete printed jobs after _ days	Keep printed jobs for this many days
Delete printed jobs when quantity exceeds _	Keep only this many printed jobs; the oldest go first
Include failed print jobs in job deletion options	Remove failed and canceled jobs by the same rule; otherwise they're kept until you delete them
Spool directory	Where job files are kept. Default: ProgramData\Brooks Internet Software\INTELLIscribe\Spool. Must be on a local fixed drive.
Retry job _ times before failing	How many more times a destination is tried after the first attempt fails

9.3 SLP

The settings given to destinations that an SLP port discovers (Appendix A). The queue name isn't set here; it comes from SLP.

10 ISendFile: Printing from the Command Line

ISendFile (ISendFile.exe, in the installation folder) sends files to an INTELLIscribe port, as if they'd been dragged onto it. Use it from batch files, scheduled tasks or other programs. Its options follow the familiar UNIX *lpr* command. The files must already be in the printer's language.

```
ISendFile [options] port file...
```

Option	What it does
--help	Show the options
-v, --verbose	Report what ISendFile does. Recommended in scripts.
-s	Silent
-h	No banner page for this job
-F=format	LPD format: f formatted, l leave control characters (preformatted), o PostScript, p pr, r FORTRAN, c CIF, d dvi, g plot, n ditroff, t troff, v raster
-C=class	Banner page class, up to 31 characters
-T=title	Job title
-J=jobname	Job name
-K=copies, -#=copies	Copies of each file
-P=port	The port, instead of the port argument
-U=username	User name; otherwise the logged-on user's
-H=host	Host name the job comes from; otherwise this computer's
-i=columns	Indent (LPD only)
-w=width	Page width (LPD only)
-Z=options	Pass these options with the job

Examples, for a port named *Office*:

```
ISendFile -v Office C:\Reports\daily.prn
ISendFile -v Office C:\Reports\*.prn
ISendFile -v "Office Printer" "C:\Month End\summary.ps"
```

Port names are case-sensitive; put names and paths that contain spaces in quotes. ISendFile exits with 0 when every file was handed to INTELLIscribe, and with a nonzero code otherwise; the reason is

printed (with -v) and logged. Any user can run ISendFile; a standard user's file is copied into the spool folder and must be readable by that user.

11 Exporting, Importing and Automating

11.1 Exporting the configuration

File > Export Configuration saves the configuration to a file, to set up another computer the same way or to keep as a backup. Choose the format in the **Save as type** list:

- **XML** (.xml) — the ports, with their policies, destinations and settings, and the Windows printers that use INTELLIscribe ports: each printer's name, port, driver, share name, location and comment.
- **PowerShell script** (.ps1) — a script that recreates the same ports, destinations and printers with the INTELLIscribe PowerShell module (11.2).

Jobs, logs and global options aren't exported. Keep a backup copy somewhere that's backed up itself.

11.2 The exported script

The script is plain PowerShell, one command per port, destination and printer, so you can read it, change it — for example, to replace host names for another site — and run it on another computer where INTELLIscribe is installed:

```
powershell -ExecutionPolicy Bypass -File .\intelliscribe-config.ps1
```

Run it as an administrator. Ports that already exist are reported and skipped.

11.3 Importing

File > Import Configuration reads an exported XML file and adds its ports, destinations and printers. It merges: existing ports are kept. If a port in the file has the same name as an existing one, the file's destinations are added to the existing port; check it afterwards.

For each printer in the file, INTELLIscribe creates the Windows printer, unless one with that name already exists. If the printer's driver isn't installed, INTELLIscribe installs it from the Windows driver store if it can; otherwise it creates the printer with the **INTELLIscribe Generic PCL6** driver as a stand-in (or, if that isn't installed, **Generic / Text Only**, which prints only plain text), and tells you which printers need their driver changed. Install each of those printers' own drivers and choose it in the printer's properties. (Microsoft's PCL6 Class Driver can't be the stand-in: Windows doesn't allow class drivers on an INTELLIscribe port; see 2.2.) If the file has no printers (it came from an earlier version), INTELLIscribe offers to create one for each imported port that doesn't have one, with the stand-in driver.

A summary at the end lists the printers created, those that already existed, those on the stand-in driver and any that failed.

11.4 The PowerShell module

Setup installs the **INTELLIscribe** module where both Windows PowerShell 5.1 and PowerShell 7 find it, so its commands are ready in any PowerShell window. Commands that change the configuration must be run as an administrator ("Run as administrator"). `Get-Help <command> -Full` shows each command's parameters and examples.

Command	What it does
Get-IScribePort	List ports, their policies and destinations
New-IScribePort	Create a port with its first destination
Add-IScribeDestination	Add a destination to a port
Set-IScribeDestination	Change a destination
Remove-IScribePort	Delete a port; its printers move to FILE:
New-IScribePrinter	Create a Windows printer on a port
Export-IScribeConfiguration	Export to .xml or .ps1, as File > Export does
Import-IScribeConfiguration	Import an XML file, as File > Import does

Destinations. `New-IScribePort`, `Add-IScribeDestination` and `Set-IScribeDestination` take `-HostName`, `-Protocol lpd` or `jetdirect`, `-Port`, and for LPD `-LpdQueue`, `-Tls`, `-TlsFingerprint` and `-TlsAllowUntrusted`. Any other setting can be given with `-Options`, a hashtable of setting names and values; settings not given take the same defaults as the wizard. `-Policy` is Failover (the default), Broadcast, RoundRobin, LoadBalance or Slp.

```
# a broadcast port with three printers, the last over TLS
New-IScribePort Scripts news1.example.com -Policy Broadcast
Add-IScribeDestination Scripts news2.example.com -Protocol jetdirect
Add-IScribeDestination Scripts rpm.example.com -LpdQueue scripts -Tls `
    -TlsFingerprint '3F:A1:...:9C'
New-IScribePrinter 'Scripts' Scripts -DriverName 'HP Universal Printing PCL 6'

# what's there now
Get-IScribePort | Format-List

# copy this computer's setup to another
Export-IScribeConfiguration \\server\share\intelliscribe.xml
Import-IScribeConfiguration \\server\share\intelliscribe.xml   # on the other computer
```

`Import-IScribeConfiguration -SkipPrinters` imports only the ports; `-CreateMissingPrinters` creates a printer, on the stand-in driver, for each port that has none.

Part II · Support Reference

12 How INTELLIscribe Works

Component	File	What it does
Port monitor	is3pmu.dll (System32)	Loaded by the Windows print spooler. Receives each job for an INTELLIscribe port and hands it to the service.
Port monitor UI	is3pmuui.dll (System32), IScribePortMonitorUI.dll	The Add Port and Configure Port commands in Windows' printer properties, and the Virtual Printer Port Wizard
Service	IServ.exe	The INTELLIscribe service: keeps the configuration, job list and log, applies the policies and sends jobs
Window	IScribeUI.exe	The INTELLIscribe program
Import	XmlImport.dll	Reads exported configuration files
Command line	ISendFile.exe	Sends files to a port (chapter 10)
Setup utility	isutilu.exe	Registers the port monitor with the spooler during setup
PowerShell module	INTELLIscribe.psd1, .psm1	The PowerShell commands (11.4)
SLP	slp.dll, slp_attrs.dll	Printer discovery for SLP ports (OpenSLP)
License	LicMgr.exe, IScribe.dll	The Brooks License Manager

The service, the window, ISendFile and the port monitor talk to each other through COM, on the local computer only; the service accepts no network connections.

A job's path. The spooler gives the job to the port monitor, which asks the service for a new job, writes the data into a file in the spool folder and schedules it. The service's scheduler picks the destination by the port's policy, queues the job for that destination (one job at a time per destination), connects and sends it with the destination's protocol. The outcome is recorded in the job database and the log, and every open INTELLIscribe window is told.

LPD. For each job, INTELLIscribe sends RFC 1179's *receive a printer job* command for the queue, then a control file — the user, host, document name, title, banner, copies and print format — and the data file, in the order set by Reverse order, waiting for the acknowledgments the settings ask for. Values in the control file have carriage returns, line feeds and NUL characters removed.

JetDirect. INTELLIscribe connects to the port and sends the data as is, with PJL around it for the status options and banner.

13 Security

13.1 The service account

The INTELLIscribe service runs as **NT SERVICE\INTELLIscribe**, a virtual account Windows creates for the service. It has only the rights the service needs: its own registry keys and its ProgramData folder, and the privileges to create global objects and traverse folders. It isn't an administrator, and it has no rights on the network beyond the computer's own.

If something in your environment requires the old behavior — for example, a spool folder on a drive the virtual account can't be given access to — an administrator can make the service run as LocalSystem by setting the registry value

```
HKEY_LOCAL_MACHINE\SOFTWARE\Brooks Internet Software\INTELLIscribe
    ServiceAccount (REG_SZ) = LocalSystem
```

and then running `IServ.exe /Service` from the installation folder as an administrator, or reinstalling. Delete the value, and do the same, to go back.

13.2 Who can do what

Action	Who
Print to an INTELLIscribe printer	Anyone allowed to use the Windows printer
Send files with ISendFile	Any logged-on user, with files they can read
Open the INTELLIscribe window	Administrators (it asks for administrator rights)
Add, change or delete ports and destinations; change options; cancel, delete or reprint jobs; import	Administrators, elevated
Use the PowerShell commands that make changes	Administrators, in an elevated PowerShell

The service accepts COM connections only from the local computer: from SYSTEM, administrators, logged-on users and the print spooler. The spool and log folders must be on local fixed drives, and setup gives them protected permissions: users can't read other users' jobs.

14 Files, Folders and Registry

What	Where
Programs	C:\Program Files\Brooks Internet Software\INTELLIscribe, unless you chose another folder
Port monitor	C:\Windows\System32\is3pmu.dll, is3pmuui.dll
Configuration database	C:\ProgramData\Brooks Internet Software\INTELLIscribe\isconfig.db
Job database	...\INTELLIscribe\isjobs.db
SLP database	...\INTELLIscribe\isslp.db
Spool folder (job files)	...\INTELLIscribe\Spool (9.2)
Logs	...\INTELLIscribe\Logfiles, one CSV file per day (9.1)
PowerShell module	C:\Program Files\WindowsPowerShell\Modules\INTELLIscribe
Third-party notices	THIRD-PARTY-NOTICES.md in the program folder; also Help > About > Legal Notices
Settings	HKEY_LOCAL_MACHINE\SOFTWARE\Brooks Internet Software\INTELLIscribe
Ports, as Windows sees them	HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Print\Monitors\INTELLIscribe Virtual Port\Ports
License	HKEY_LOCAL_MACHINE\SOFTWARE\Brooks Internet Software\Brooks License Manager\INTELLIscribe

ProgramData is a hidden folder; type the path into File Explorer's address bar to open it.

15 Troubleshooting

Start with the log (4.4): almost every problem is recorded there with its cause. For one destination, set its Log Detail to High (6.3) and try again.

15.1 The status bar icon is red

The INTELLIscribe service isn't running, and nothing prints. Start it in Services, or with `net start INTELLIscribe` as an administrator. If it doesn't start, look in Event Viewer > Windows Logs > Application and System for the reason.

15.2 A job stays in the Windows print queue

The printer isn't handing jobs to INTELLIscribe. Check that:

- the INTELLIscribe service is running (15.1);
- the printer's port, in its Printer properties > Ports, is an INTELLIscribe port;
- the port is listed in the INTELLIscribe window. If a port exists in Windows but not in INTELLIscribe, delete it in Windows and create it again in INTELLIscribe.

If INTELLIscribe ports aren't offered in Windows at all, check that Windows protected print mode is off (2.3); while it's on, Windows doesn't load INTELLIscribe's port monitor. If it is off, the port monitor isn't registered: run Setup again (repair), with the Print Spooler running.

15.3 A job is listed but didn't print

Look at its status (8.1) and at the log:

- **Connection refused, or timed out:** the destination isn't reachable at that address and port. Check the address, the protocol's port, that the printer is on, and any firewall in between. `Test-NetConnection printer1.example.com -Port 515` in PowerShell tests the connection.
- **LPD queue errors:** the queue name is wrong for that server. Try *raw*, *lp* or the name in the printer's documentation.
- **Prints garbage, or nothing:** the Windows driver doesn't match the printer, or the printer doesn't support the language the driver produces. With several destinations, they must all understand the same language.
- **TLS errors:** see 7.3.
- **The job is Done, but nothing printed:** the destination accepted the job. Check the printer and its own queue; with LPD, turn off **Ignore final ack** to have a server error reported.

Once the cause is fixed, reprint the job (8.2).

15.4 Can't create a printer on an INTELLIscribe port

If the Add Printer wizard fails with *Unable to install printer*, *The printer name is invalid* or a similar message, or a printer can't be moved to an INTELLIscribe port, the driver is almost always a class driver or another type 4 driver, which Windows doesn't allow on an INTELLIscribe port. Choose a type 3 driver for the printer instead (2.2). If INTELLIscribe ports aren't offered at all, see 15.2.

15.5 Can't save a port, or "only administrators can..."

Changing INTELLIscribe's configuration needs administrator rights. The INTELLIscribe window asks for them when it opens. In Windows' printer properties, opening the wizard from a window that isn't running as administrator can't save the port; use the INTELLIscribe window instead.

15.6 Capturing a job for support

Drag the job from the Print Jobs tab into an email, or into a folder, to get a copy of exactly what INTELLIscribe received. Its file is also shown in Job Properties (8.4).

15.7 Contacting support

Email support@brooksnet.com with:

1. what you were doing, and what happened — the exact text of any message, or a screenshot;
2. whether it happens every time;
3. the log for the day it happened (from the log folder, 9.1), with Log Detail set to High for the destination if you can reproduce it;
4. what Help > About shows.

Appendix A Service Location Protocol (SLP)

The SLP policy finds printers on the network instead of having them entered. INTELLIscribe acts as an SLP *user agent*: it asks SLP service agents and directory agents (RFC 2608) for printers that support LPR/LPD, and adds a destination for each one found, with the settings from View > Options > SLP (9.3) and the queue name the printer advertises. When a printer is no longer advertised, its destination is removed.

When a job is printed to an SLP port and more than one printer has been found, the INTELLIscribe window asks which one to use; its taskbar button flashes. To avoid being asked, select a destination and choose **Destination > Set as default**: jobs then go to it without asking. **Destination > Attributes** shows what a printer advertises about itself.

Because the window must be open to choose a printer, an SLP port suits a workstation more than a server. Changing a port to the SLP policy deletes its existing destinations.

Appendix B Glossary

Destination. A printer, print server or host that INTELLIscribe sends jobs to: an address, a protocol, a TCP port and settings.

INTELLIscribe Generic PCL6. The type 3 PCL6 printer driver INTELLIscribe Setup installs, for printers that have no type 3 driver of their own; also the stand-in for printers whose driver isn't installed (2.2).

JetDirect. Raw TCP printing, usually to port 9100, introduced by HP's JetDirect print servers and supported by most network printers.

LPR/LPD. The Line Printer Daemon protocol (RFC 1179). The LPD is the server that receives jobs; INTELLIscribe is an LPR client.

LPD over TLS. LPD carried inside a TLS connection, so jobs are encrypted (chapter 7).

Fingerprint. The SHA-256 hash of a certificate, or of its public key, which identifies it.

Policy. How a port chooses destinations for each job and handles a destination's failure (5.2).

Port. Here, an INTELLIscribe port: what a Windows printer prints to. INTELLIscribe calls the list of a port's destinations its *queue*, and the two words mean the same thing in INTELLIscribe.

Port monitor. The part of INTELLIscribe that the Windows print spooler loads to handle INTELLIscribe ports.

Printer language. What the printer understands, such as PCL or PostScript. The Windows driver produces it; INTELLIscribe passes it on unchanged.

Spool folder. Where INTELLIscribe keeps job files for reprinting.

SLP. Service Location Protocol (RFC 2608), for finding services such as printers on a network (Appendix A).

Type 3 and type 4 drivers. The two kinds of Windows printer driver. Printers on INTELLIscribe ports need a type 3 driver; Windows doesn't allow type 4 or class drivers there (2.2).

Windows protected print mode. A Windows 11 setting that blocks printer drivers and port monitors that aren't Microsoft's. It must be off for INTELLIscribe (2.3).