White Paper

Host-to-Windows Workflows

» iSeries™ and zSeries® Windows Printing

Simple tools for connecting IBM-based data with the Windows world

◊ As a side note, SNA has long been the preferred IBM host communication method, even though maintaining individual SNA connections can be expensive. With today's increased Windows connectivity requirements, TCP/IP is now favored. TCP/IP is the protocol underlying the data interchanges discussed in this article.

A major challenge for IT managers and system administrators is that much of the data they need to access and use in Windows environments is stored in iSeries and Mainframe host systems running critical company applications. Traditionally, unlocking this host system data and making it available in Windows environments for printing or further processing has involved major reprogramming on the host side and significant investments in hardware, software, and other resources. There are, however, simple, inexpensive solutions that address this data divide, the jump from host to Windows.

WHY WINDOWS?   First off, what are some advantages of making host data available in Windows environments?

» **Increasing data availability:** When host data is available on Windows PCs, say on an end user's desktop, or servers accessible on the network, the information can be used in documents or presentations, easily analyzed for business decisions, or made available for remote access and review. When information is available and easily accessible, it becomes a driver for key business processes.

» **Connecting cross-platform applications:** The heart of most organizations is an IBM host running critical business applications. But at the same time, peripheral applications reside on Windows PCs or servers, and these applications need access to the data residing on the host. Creating a reliable, flexible data bridge is essential.

» **Lowering printing costs:** Windows-based printers are common, inexpensive, and relatively easy to maintain. Being able to print mainframe or iSeries jobs easily to these resources lowers printing costs.

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» **Increasing printing convenience and flexibility:** Windows-based printers can be placed conveniently next to a PC or in high-traffic areas. New printers can be added to the network when needed, either when one is down or when more resources are needed. This kind of flexibility is available in Windows-based print environments.

SOLUTION: AN INFORMATION BRIDGE In theory, connecting two systems should involve simply opening a pipeline and pushing information through to the receiving system: an iSeries opens a port and transfers host data to Windows. Problem solved. Host data is available for use.

In practice, there are, of course, complications. And that's where the solutions discussed here come in, solutions that provide a data bridge and address the nuances of the transfer.

SIMPLE CROSS-PLATFORM PRINTING One of the simplest, and possibly most useful, host-to-Windows tasks is printing documents on network or attached printers. Hardware and software print servers provide the solution. Starting with V2R3 on the iSeries, functionality has been available to use TCP/IP for sending print jobs to remote print servers using the LPR/LPD protocol. The hosts' queues are simply pointed to the print server's address, which receives jobs and passes them to a Windows-based printer. There are two types of print servers: hardware and software.

HARDWARE PRINT SERVERS Most hardware-based print servers are easy to install and set up: Simply connect the print server to the network and to your printer. Most can be configured (if necessary) through a Web interface, allowing you to fine-tune the process. As a general rule, hardware print servers function well as pass-through devices (receiving and passing jobs to the printer without modification to the data), but support only one connection at a time from the host and do not support printer finishing functions.

Simple hardware print servers are generally less expensive than software counterparts, but if you have multiple printers that you want to print to from the host, a hardware server is required for each.

SOFTWARE PRINT SERVERS Software print servers, while maintaining pass-through functionality, have data massaging capabilities. The same job, which was formatted incorrectly with a hardware server, can be formatted by a software server. For example, a hospital information system provider needs to create labels from AS/400 healthcare applications. Host data is sent to a software print server, then transformations are performed: SCS is converted to ASCII, orienta-

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tion is changed from portrait to landscape, font is changed to Tahoma 10pt, lines per inch are changed to 8, and page margins are altered. Patient or pharmacy labels are then printed correctly to a Windows-based, local or network thermal label printer.

These formatting functions can be applied in many other situations across all industries, such as printing traditional greenbar reports on common paper and printers. A large state agency, by replacing green screens with PCs and 3270 emulators, and using TCP/IP in place of SNA, has saved millions of dollars directing mainframe print jobs to locally attached parallel cable and USB-attached printers. Printouts are conveniently available and printer costs are significantly lower.

Software print servers, though more costly than hardware servers, provide much more functionality. A single instance of a software server can also be used for multiple output printers. Although host-to-Windows printing is one of the most common connectivity tasks, software print servers are often put in place to enable multiplatform workflows.

CROSS-PLATFORM WORKFLOWS: CONNECTING APPLICATIONS   Compliance requirements, like those outlined in Sarbanes-Oxley, have highlighted another key feature of software print servers: the ability to archive print jobs to disk. Some software print servers allow a document to be saved to disk to comply with audit requirements. An institution in the financial industry has been able to print jobs from a mainframe to Windows printers while at the same time saving the jobs to disk. Another process archives the folder's contents to DVD periodically for future auditor access.
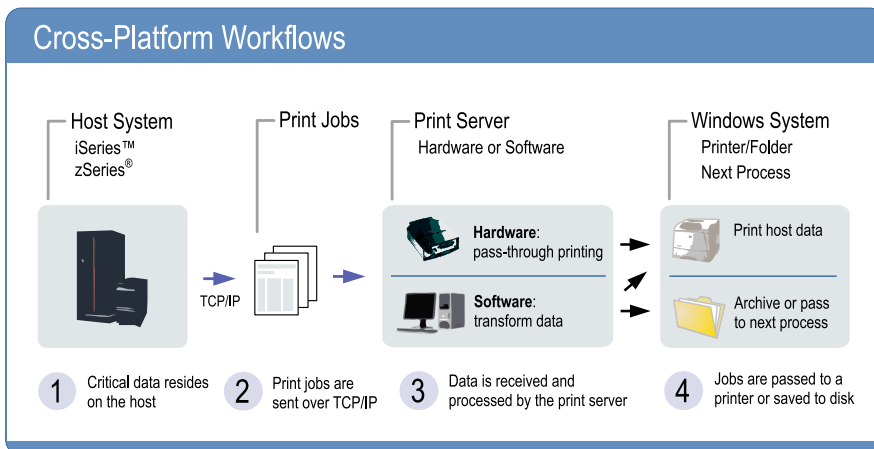
This same document archive feature is used as a bridge between host data and Windows-based applications. A print file residing in a watched folder is picked up by other applications, which can perform further functions on data, including parsing, converting to PDF, and passing the information to the next process. For example, many forms-generation packages use software print servers to gain access to host data, parse the data, format it, and burst the generated forms. In this setup,

Cross-Platform Workflows

Host System	Print Jobs	Print Server	Windows System
iSeries™ zSeries®		Hardware or Software	Printer/Folder Next Process

Hardware: pass-through printing
Software: transform data

Print host data
Archive or pass to next process

1. Critical data resides on the host
2. Print jobs are sent over TCP/IP
3. Data is received and processed by the print server
4. Jobs are passed to a printer or saved to disk

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◊ Founded in 1995, Brooks develops TCP/IP network printing solutions that allow Windows-based computers to print to and receive data from non-Windows computers: INTELLIscribe® for sending print requests, RPM Remote Print Manager® for receiving host print requests, and ExcelliPrint® for receiving AFP/IPDS print requests from IBM mainframe and midrange servers. For more information, call 208.523.6970 or visit www.brooksnet.com.

the print server is simply a go-between for platforms.

Supply chains can also benefit from these functions. A document flow facilitator uses server software to link ERP systems. The host sends jobs to the print server, which saves the jobs either to disk or "prints" to the receiving application. The print data is parsed and often converted to structured XML, which can be imported into the partner's ERP system. Some solutions will publish the data on the web in HTML or PDF format, so remote associates can securely access the information from anywhere.

So while software print servers are often the final step in host-to-Windows processes like printing, the same servers are just as useful as the first step in more complex workflows spanning many systems, platforms, or organizations.

SUMMARY The hardware and software print servers discussed in this article are inexpensive, easy to configure, and easy to maintain. The main advantages of using print servers, software print servers in particular, to connect hosts to Windows environments are as follows:

» **Minimum host-side modifications:** Putting a print server in place requires little change to the host. In most cases, the host printer simply needs to be redirected to the server's IP address. Generally, no additional software is required on the host system.

» **Simplified print job management:** Managing print jobs in the Windows environment reduces host system operator's expense.

» **Advanced formatting and finishing capabilities:** Host data can be formatted for a specific Windows printer allowing full use of all printer finishing functions, including double-sided printing, stapling, hole punching, n-up, watermarks, etc. Margins, fonts, and text compression are generally supported. Other data massaging options can be supported, including PCL removal, ASA/Fortran, CR to CR/LF, EBCDIC conversion, and SCS to ASCII.

» **Other connectivity:** Even though most print data comes from an IBM host, environments often contain other systems, including UNIX, Linux, and other operating systems. A software print server is capable of receiving (and transforming) data from these other systems. Multiple inbound connections and protocols can be supported.