

Infoprint Server for iSeries



Introduction and Planning Guide

Version 5, Release 2.0

Infoprint Server for iSeries



Introduction and Planning Guide

Version 5, Release 2.0

Note

Before using this information and the product it supports, be sure to read the general information in "Notices" on page 27.

Second Edition (August 2002)

This edition applies to the IBM® Infoprint® Server for iSeries™ Version 5 Release 2 Modification 0 licensed program, Program Number 5722-IP1, and to all subsequent releases and modifications until otherwise indicated in new editions or technical newsletters. Be sure to use the correct edition for the level of the product.

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About Infoprint Server for iSeries: Introduction and Planning Guide (G544–5774)

This publication provides an overview of Infoprint Server for iSeries Version 5 Release 2 (licensed program number 5722–IP1). The term "iSeries" refers to the system formerly called AS/400®. The term "OS/400®" refers to the operating system of the iSeries.

This introduction includes an overview of Infoprint Server for iSeries, explains its benefits, describes how you can use Infoprint Server for iSeries, describes how Infoprint Server for iSeries works, and introduces some products you can use with Infoprint Server for iSeries. This publication is organized into chapters to help you obtain the information you need about Infoprint Server for iSeries. Instead of reading the entire publication, you can read only those chapters that apply to you:

- **Chapter 1, "What Infoprint Server Can Do for You"** is intended for managers and system administrators. The chapter describes the overall benefits that Infoprint Server for iSeries provides and lists the hardware and software needed to use this product.
- **Chapter 2, "Using Infoprint Server"** is intended for managers, operators, and system administrators. It provides a number of scenarios that show how you can use Infoprint Server for iSeries in various printing situations.
- **Chapter 3, "Understanding the Infoprint Server Components"** is intended for system administrators who want to understand how Infoprint Server for iSeries works. The chapter describes the component parts of Infoprint Server for iSeries.
- **Chapter 4, "Related Products"** describes some IBM products that you can use with Infoprint Server for iSeries.

Who Should Read This Book

This publication is intended for people who need to understand the benefits and capabilities of Infoprint Server for iSeries.

Prerequisite and Related information

Use the iSeries Information Center as your starting point for looking up iSeries technical information.

You can access the Information Center two ways:

- From the following Web site:
<http://www.ibm.com/servers/eserver/iseries/infocenter>
- From CD-ROMs that ship with your order:
iSeries Information Center, SK3T-4091-02. This package also includes the PDF versions of iSeries manuals, *iSeries Information Center: Supplemental Manuals*, SK3T-4092-01, which replaces the Softcopy Library CD-ROM.

The iSeries Information Center contains advisors and important topics such as Java™, TCP/IP, Web serving, secured networks, logical partitions, clustering, CL commands, and system application programming interfaces (APIs). It also includes links to related IBM Redbooks™ and Internet links to other IBM Web sites such as the IBM home page.

With every new hardware order, you receive the *iSeries Setup and Operations CD-ROM*, SK3T-4098-01. This CD-ROM contains IBM @server iSeries Access for Windows and the EZ-Setup wizard. iSeries Access offers a powerful set of client and server capabilities for connecting PCs to iSeries servers. The EZ-Setup wizard automates many of the iSeries setup tasks.

The Printing Systems iSeries Products Web page contains information about this product. See this Web page:

<http://www.ibm.com/printers/R5PSC.NSF/Web/as400overview>

For other related information, see the “Bibliography” on page 37.

iSeries Navigator

IBM iSeries Navigator is a powerful graphical interface for managing your iSeries servers. iSeries Navigator functionality includes system navigation, configuration, planning capabilities, and online help to guide you through your tasks. iSeries Navigator makes operation and administration of the server easier and more productive and is the only user interface to the new, advanced features of the OS/400 operating system. It also includes Management Central for managing multiple servers from a central system.

You can find more information on iSeries Navigator in the iSeries Information Center and at the following Web site:

<http://www.ibm.com/eserver/series/navigator/>

Summary of Changes

Summary of Changes for Infoprint Server for iSeries: Introduction and Planning Guide, G544–5774–01

This publication contains additions and changes to information previously presented in *Infoprint Server for iSeries: Introduction and Planning Guide*, G544–5774–00, which supports Infoprint Server for iSeries Version 5 Release 1.0. The technical additions and changes are marked with a revision bar (|) in the left margin.

These changes have been made throughout the book:

- For OS/400 5.2, the product name Operations Navigator has been changed to iSeries Navigator. In this document, the term iSeries Navigator refers to both Operations Navigator and iSeries Navigator unless otherwise noted.
- For OS/400 5.2, the product name Client Access Express has been changed to iSeries Access. In this document, the term iSeries Access refers to both Client Access Express and iSeries Access unless otherwise noted.
- The PDF transform is now referred to as the PDF subsystem.

The following information is new or updated:

- A section that describes the enhancements included in version 5.2 has been added. See “What’s New in Infoprint Server Version 5.2?” on page 5.
- A section that describes the hardware required to run Infoprint Server 5.2 for iSeries has been added. See “Hardware Requirements” on page 8.
- A section that describes the software required to run Infoprint Server 5.2 for iSeries has been added. See “Software Requirements” on page 8.
- A section that describes what Infoprint Server 5.2 for iSeries is compatible with has been added. See “Compatibility” on page 8.
- A new chapter has been added that describes other IBM products you can use with Infoprint Server. See Chapter 4, “Related Products” on page 23.

Chapter 1. What Infoprint Server Can Do for You

Infoprint Server for iSeries (hereafter referred to as Infoprint Server) is a separately orderable program for OS/400 5.1 and higher. Infoprint Server focuses on the network, extending the considerable capabilities of the iSeries beyond printing to the management and dissemination of output. As business applications are re-engineered into e-business applications, the output of those applications might need to change and flow electronically to the consumer of that output.

For enterprise printing requirements, Infoprint Server delivers improved efficiency, improved reliability, and lower overall printing costs. It does this by applying iSeries printing management and iSeries-attached printers to the task of handling all of the essential printing generated across the network.

This chapter describes how output and printing requirements are changing. It explains how Infoprint Server fits into this changing environment and how implementing Infoprint Server can benefit you.

How Output Requirements Are Changing

With the advent of a fully electronic computing environment, which includes local area networks and the Internet, standard server-centric business applications are being re-engineered into e-business applications. In many cases, this has ramifications for the output that those applications produce. For example:

Companies require more electronic output

Businesses need to implement business-to-business and business-to-customer applications that have electronic output distribution instead of paper creation. The traditional output model of "print and distribute" is changing to one of "distribute (electronically), then (maybe) print". Electronic output reduces costs, decreases cycle time, improves competitiveness, and increases customer satisfaction.

Network-centered printing is inadequately managed and costly

Many key applications within an iSeries extended environment now reside outside the iSeries server. Printing to personal or LAN-attached printers is usually far costlier and far less reliable than printing from the iSeries. Companies would like to apply iSeries print management and iSeries printers to this task. In addition, many new applications that are client-server in implementation, such as enterprise resource planning (ERP) and Independent Software Vendor (ISV) solutions, create ASCII output because it is a common denominator across clients and servers. Transforming these data streams to AFP™ enables robust iSeries print management.

Output applications need to be portable across different systems

Many line-of-business applications, such as statements, invoices, and policies, need to have the flexibility to print on servers other than the server where the data resides. In order to do this, the print file needs to be packaged with all of the resources, such as fonts, overlays, and images that are needed for printing.

New output formatting on iSeries needs additional printing and viewing capabilities

While the majority of iSeries output applications are formatted with Data Description Specifications (DDS), the iSeries also offers an application-independent formatting approach: iSeries page definitions and

form definitions. This separates page formatting from the line-of-business application. In addition, with Infoprint Designer for iSeries, you have a graphical design interface for these applications. Infoprint Server addresses the requirement to take print applications with page definition and form definition formatting and transform them into final-form AFP. This lets them be easily printed and viewed by "downstream" processes.

Workstation users want to integrate Web and client images into iSeries applications

Workstation users want to be able to use images from the Web or their workstation in GIF, TIFF, and JPEG format in their OS/400 documents. This saves time by allowing the user to create the image in only one format.

How to Handle the Changing Output Requirements

| Print server consolidation is the best way to handle the changing printing requirements. Why? One central print server in a network is more cost effective than a distributed solution with printers attached to many different LAN servers or local desktop computers. Consolidating onto a central print server lets you use the right printer for specific print jobs. OS/400 5.1 and higher with Infoprint Server lets you consolidate your print workload from many servers to a central OS/400 print server. OS/400 handles high volume printing, logs accounting histories, and provides data security and recovery. With OS/400, you can control host and LAN printing. You do not need to continually upgrade your server so it can handle more print requests.

How Infoprint Server Fits in with OS/400 Printing

Infoprint Server significantly expands the possibilities of print and electronic output in an iSeries environment, integrating new capabilities within the existing print framework. Let's take a closer look and see how. The existing output subsystem is generally print-centric. Figure 1 on page 3 depicts the flow within this subsystem. Any OS/400 application that creates print uses a printer file to provide job-level control information as the data is written to the output queue. DDS keywords can be used to define how application and static information is placed on each page. With these instructions, the application places print data (a spooled file) on an OS/400 output queue. The print data on the queue is usually either SCS (SNA Character Set) for simple line-mode output or AFP with graphics. With AFP print data, there are frequently embedded references to external print resources, such as fonts, overlays, and page segments.

Once the print data resides on the OS/400 output queue, there are three drivers that can route the print data to a printer. The driver is automatically selected based on the type of target printer. Base OS/400 print management includes the driver for printing to SCS printers. Host Print Transform is the driver for ASCII printers, principally PCL printers. When a PCL printer is selected by the print writer, the print file (either SCS or AFP) is passed to Host Print Transform. Host Print Transform then transforms the print data into ASCII and sends it to the printer. When an Intelligent Printer Data Stream™ (IPDS™) printer is started, Print Services Facility™ (PSF) for OS/400 is automatically invoked and interactively manages the entire printing process with the printer. When PSF for OS/400 manages AFP print data, it ensures that any external resources required, such as fonts, overlays, and images, are in printer memory when needed.

With OS/400 3.2 and 3.7, two additional types of external resources appeared on the scene: page definitions and form definitions. These resources are a standard

part of the AFP architecture and enable the pages to be formatted independently of the application program. Infoprint Designer for iSeries is a fully graphical output composition system that uses these resources to design new applications or re-engineer existing ones.

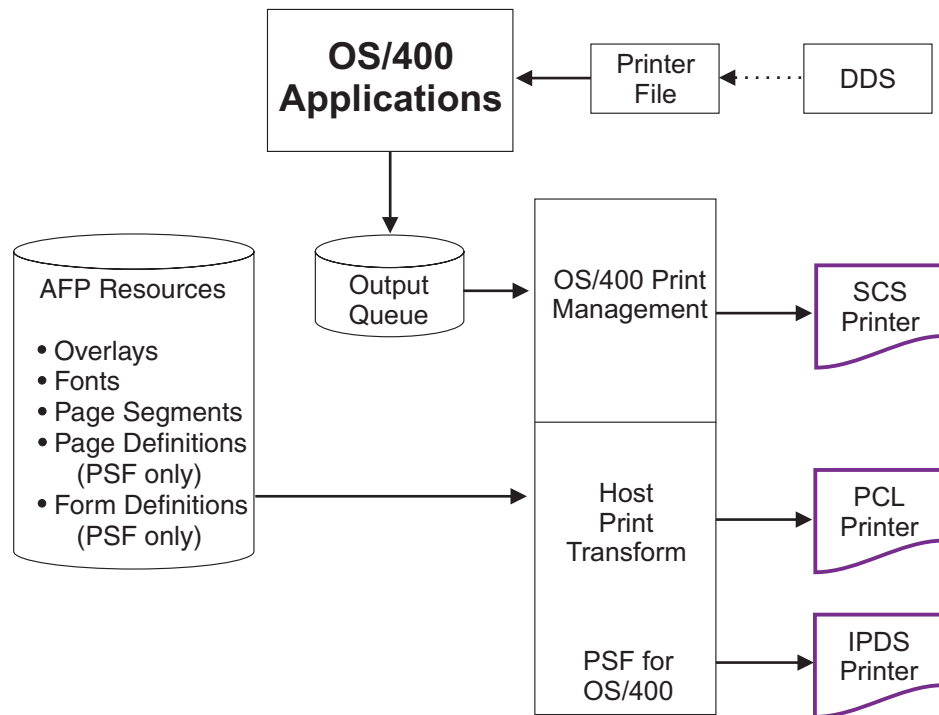


Figure 1. iSeries Printing without Infoprint Server

Infoprint Server opens up this print architecture. Figure 2 on page 5 shows the functional elements that Infoprint Server adds to the picture. The Infoprint Server components are shaded. The general focus is in two major areas: (1) projecting OS/400 output to the network, and (2) incorporating the network into the OS/400 print functions.

Infoprint Server has five functional components:

- PDF services
- E-mail iSeries output
- PDF, PostScript, and PCL to AFP datastream transforms
- Create AFP Data command for AFP indexing and creation of portable AFP
- Image transforms for GIF, TIFF, and JPEG to iSeries format

Let's go through the Infoprint Server functional elements one by one. First, transforms have been built into OS/400 that convert several types of input data to image-based AFP and place it on an OS/400 output queue. The input data can be Printer Control Language (PCL), PostScript, or Portable Document Format (PDF) print data. This enables most ASCII output created in the OS/400 or on the network to be put in native OS/400 format (AFP), which lets users take advantage of the OS/400 print management capabilities. These transforms are managed by Transform Manager.

A central component of Infoprint Server is the PDF subsystem. This subsystem enables the conversion of any standard OS/400 output (SCS, AFP, mixed data, IPDS, or OfficeVision/400™) to Adobe PDF. The conversion process is highly

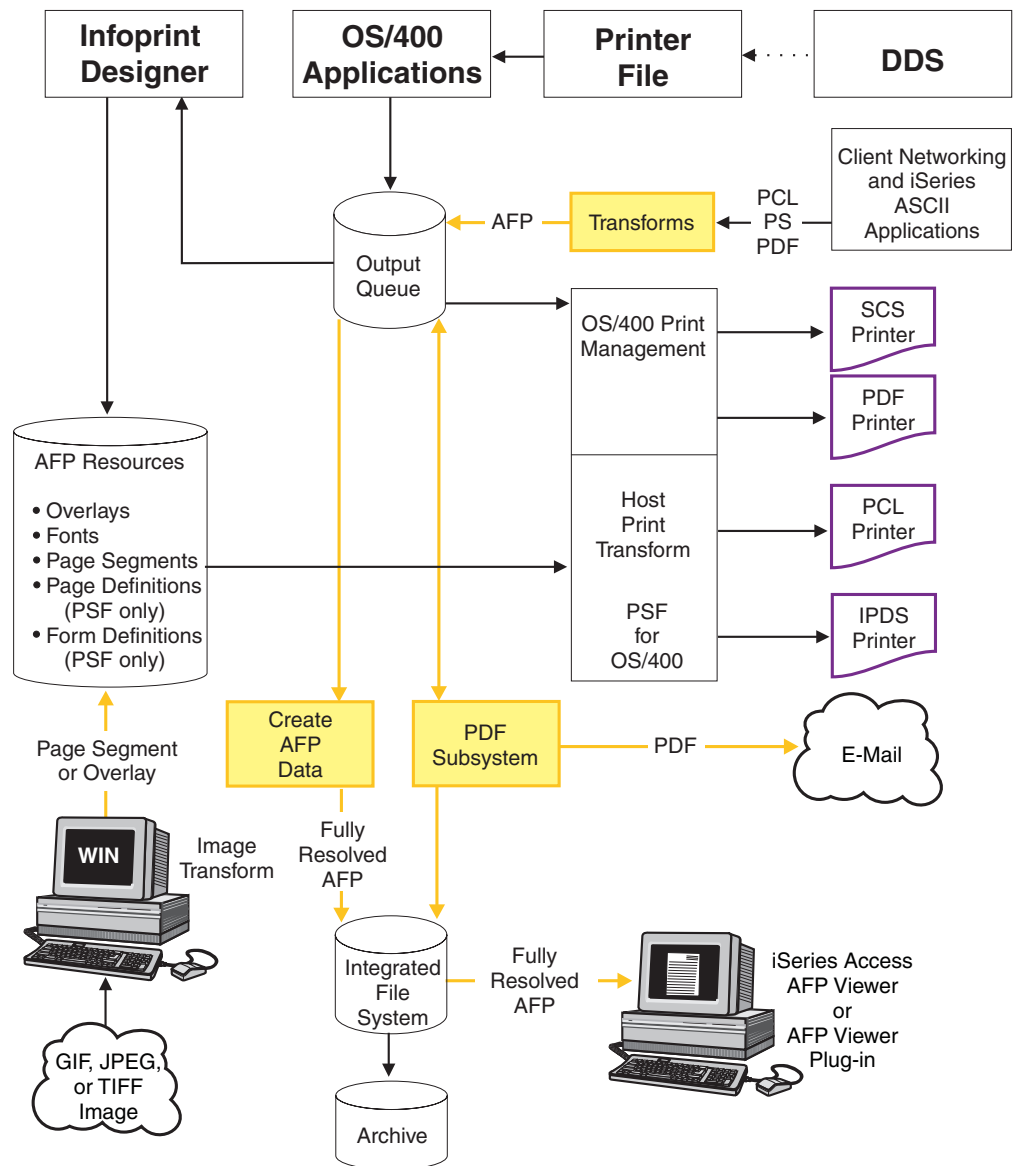


Figure 2. iSeries Output Management with Infoprint Server

See Chapter 2, “Using Infoprint Server” on page 9 for examples that show how you can use the Infoprint Server components in different printing scenarios. For more detailed information about the Infoprint Server components, see Chapter 3, “Understanding the Infoprint Server Components” on page 17.

What’s New in Infoprint Server Version 5.2?

Infoprint Server 5.2 provides these enhancements:

- Use an SMTP server to send e-mail:

Previously, the only way to send e-mail from Infoprint Server was through the SNDDST command. With Infoprint Server 5.2, you can specify that Infoprint Server uses an SMTP server to send your e-mail.

- Individualize e-mails that are sent by the PDF subsystem:

With the prior version of Infoprint Server, you could only use a PDF mapping program to map mail tags when you specified a keyword, such as a customer

number, for the mail tag. Now you can use the PDF mapping program to interpret mail tags, specify the subject text, and add a customized message to the beginning of each e-mail. If you use an SMTP mail server to send the e-mail, you can also specify a file to be used in the body of the e-mail, add carbon copy (cc) and blind carbon copy (bcc) recipients, specify an address for the recipient to reply to, and add attachments.

- Use fonts from your Mac when transforming PostScript data to AFP:
With Infoprint Manager for Windows® or Infoprint Manager for AIX® along with Infoprint Server Font Downloader, you can upload DBCS fonts from your Mac to the iSeries. You can then use these fonts with the PostScript to AFP transform.
- Transform enhancements:
The PDF, PCL, and PostScript to AFP transforms that are shipped with Infoprint Server 5.2 have been enhanced for better performance. The PCL to AFP transform now supports PCL 6.
- Indexing for PDF files:
When transforming a file to PDF, Infoprint Server can now place index tags at group boundaries and return one PDF file. This lets you easily navigate the file when viewing it on your workstation.
- Smaller PDF files:
Infoprint Server 5.2 lets you generate a PDF file without the fonts embedded. This lets you produce smaller PDF files.
- Enhancements to Create AFP Data:
Easier file management: Create AFP Data (CRTAFPDTA) now lets you tell Infoprint Server to delete the output stream files after it merges them together. Two new parameters make it easier to identify the input file.
- Interactive access to PDF and e-mail functions
Infoprint Server for iSeries, together with iSeries Access 5.2, lets you use the fully graphical iSeries command interface to run PDF and e-mail functions interactively. Send output by e-mail in one step. Write single or multiple output files to the integrated file system.
- Support printing with new iSeries Web Access
Infoprint Server for iSeries, when installed with iSeries Access, enables direct PDF printing from your browser.

Benefits of Using Infoprint Server

Users and applications in the typical iSeries enterprise environment can take full advantage of Infoprint Server's many benefits, including:

Create Electronic Output

In order to stay competitive, companies need to cut costs and decrease cycle time by creating electronic output instead of all paper creation and distribution. The PDF subsystem component of Infoprint Server lets you create PDF output from any file that can be input to PSF for OS/400. The PDF file can be e-mailed to one or more recipients, stored for later use on the Web, stored for archival purposes, or sent to a PDF printer.

The PDF subsystem can also add indexing tags to logically divide a document into sub-documents such as customer statements, or physically divide a document into separate files. A logically divided file is easily navigated with a viewer. If the

| document is physically divided, each file can be sent to a different e-mail address,
| retrieved, or printed individually, which replaces the need for a manual "burst and
| bind" process.

Better Access to IPDS Printers

In today's network environments, workstation users are often limited to personal and LAN printers. Infoprint Server lets any user in the network send print jobs in a wide range of formats from OS/400 and LAN clients to IPDS printers attached to OS/400.

Handle Print Jobs Effectively

Infoprint Server increases the types of jobs you can print through your OS/400. Because print jobs are managed by the OS/400 spool, they are secure and recoverable. OS/400 accounting information for print jobs is logged automatically.

Detect and Transform Job Data Streams

Image Print Transform, a component of OS/400, automatically detects the data stream for PCL, PDF, and PostScript jobs that LAN clients submit. Transform Manager then uses the appropriate transform to convert the data stream for printing on an IPDS printer.

Support Common Printer Languages

Infoprint Server provides support for those output languages common in both iSeries and network environments, including SCS, AFP, line data, PostScript, PCL, and PDF. Infoprint Server protects your investment in printing applications and hardware while providing the extensions critical to re-engineer printing and output business functions.

Create AFP Output from Images on Windows

Infoprint Server lets you convert the most common image formats (GIF, TIFF, and JPEG) to AFP. This simplifies graphics maintenance by letting you use the same graphics in your OS/400 documents, workstation documents, and Web presentation.

External Formatting Flexibility

Many applications ported to OS/400 output line data. Through the Create AFP Data command, Infoprint Server gives you more ways to use this output without modifying the application. It lets you view the line data before printing, packages the data with the resources needed for printing, and lets you print it on PCL printers.

This benefit lets you use Infoprint Designer to easily specify document and report page formatting while maintaining the flexibility of viewing and printing your output almost anywhere.

Easier Navigation of Large Files

As businesses increase electronic file use, it becomes necessary to be able to quickly navigate those files. For example, an application might create customer statements. Infoprint Server gives you the ability to index the statement file so that customer service representatives can quickly find and view a customer's statement. It can also package the statements with their resources. This lets customer service representatives view the statement on their workstations in the same format as the customer's copy. This also makes archiving more manageable because it lets you to retrieve an individual statement when you need it.

The PDF subsystem lets you use the indexing information to break a large file into smaller files, such as customer statements, then store, e-mail, or print the smaller files.

Print to PDF Printers

When IPDS printers are not required, businesses need access to ASCII printers. Without Infoprint Server, OS/400 supports printing iSeries output on PCL printers. A new generation of printers, such as the IBM Infoprint 21, IBM Infoprint 45, and IBM Infoprint 70 support printing PDF directly. Infoprint Server lets you print to these printers. This can increase performance over printing to PCL printers because the PDF output is not converted to an image before printing, while PCL data is.

Hardware Requirements

OS/400 5.2 runs on these iSeries systems:

Model 150	Model 6xx/Sxx
Model 170	Model 7xx
Model 250	Model 8xx
Model 270	

The PASE environment requires an AS/400 or @server iSeries model 600 or higher.

Software Requirements

In order to run Infoprint Server for iSeries, you need OS/400 5.1 or higher. A PSF for OS/400 license is not required.

To print the PDF output from the PDF subsystem requires Acrobat Reader 5.0. You can download it free from the Adobe Web site:
<http://www.adobe.com/products/acrobat/main.html>.

The Font Downloader feature of Infoprint Server requires a PC running Infoprint Manager for Windows (Program Number 5639-N49), DBCS Font Downloader feature (LCD4-5884-00), or an AIX system running Infoprint Manager for AIX (Program Number 5765-E42), DBCS Font Downloader feature (LCD4-5884-00).

In order to use the PCL, PDF, or PostScript to AFP transform, you need OS/400 5.1 or higher with the PASE feature installed.

The image transforms (GIF, JPEG, and TIFF to AFP) require a PC running Windows 95, Windows 98, Windows 2000, or Windows NT® with service pack 4 installed.

Compatibility

Infoprint Server 5.2 for iSeries is upwardly compatible with Infoprint Server 5.1 for iSeries.

Chapter 2. Using Infoprint Server

This chapter describes how you can use Infoprint Server in your particular environment to meet your printing needs. It includes the following scenarios:

- “Publishing iSeries Output Electronically” on page 10
- “Electronic Report Distribution” on page 11
- “Printing Enterprise Print Output on IPDS Printers” on page 12
- “Integrating Web and Network Images into iSeries Applications” on page 13
- “Indexing Data for Navigation” on page 14
- “Distributing AFP Output Electronically” on page 15

These scenarios are examples of printing situations, but do not represent all situations that exist. Each scenario includes a figure that shows which Infoprint Server components are used. The components are shaded in the figures.

Publishing iSeries Output Electronically

In this scenario, a company uses an iSeries to generate monthly reports. These reports are then distributed to the sales regions. Instead of sending out hardcopy versions of these reports, the company wants to make them available for Web access.

Here is how this company can use the Infoprint Server components to meet its requirements:

1. An OS/400 application creates the data and puts it on the spool.
2. The data (SCS, IPDS, AFP, Line Data, or OfficeVision/400 data stream) is sent to print. The device description associated with the printer writer specifies a PSF configuration object.
3. The PSF configuration object specifies that the data is to be transformed into PDF. Therefore, the data is sent to PSF.

Note: Although the PDF subsystem interacts with PSF, you do not need a PSF license to use the PDF subsystem.

4. PSF sends the data to the PDF subsystem. The PDF subsystem transforms the data into PDF and sends it back to PSF.
5. PSF places it in the integrated file system in a specified location. You can specify the location in the PSF configuration object.

You can put the PDF file in an area of the integrated file system that a Web client can access. If you put the file in a folder that your PC has access to, you can use your PC to access the file.

Figure 3 shows how Infoprint Server lets you publish iSeries output.

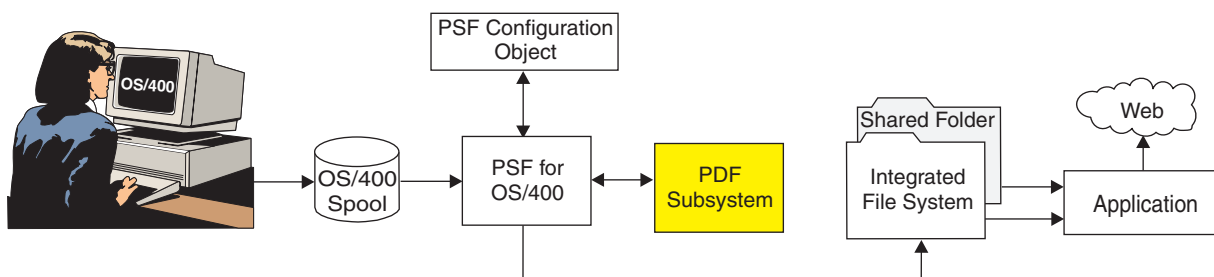


Figure 3. Publishing iSeries Output Electronically

Electronic Report Distribution

In this scenario, a company wants to distribute its monthly sales reports to regional managers. Currently, the reports are generated on an OS/400, printed, manually separated, and sent to the managers. The goal is to electronically send the regional managers only the report for the area that they control.

Here is how this company can use the Infoprint Server components to meet its requirements:

1. A sales report application uses a tool to generate statements that contain group tags and puts the file on the output queue. Some tools the application could use are Data Description Specifications (DDS) keywords, AFP Toolbox, or the Infoprint Server Create AFP Data (CRTAFPDTA) command
2. The data is sent to PSF. In order to call the PDF subsystem, the device description associated with the printer writer specifies an appropriate PSF configuration object.

Note: Although the PDF subsystem interacts with PSF, you do not need a PSF license to use the PDF subsystem.

3. The PSF configuration object specifies that the data is to be transformed into multiple PDF files and e-mailed, so PSF sends the data to the PDF subsystem.
4. The PDF subsystem uses the group tags to segment the statements by regional office and creates a PDF file from each segment, then sends the files back to PSF.
5. If the file specifies a keyword, such as a regional ID, instead of an actual e-mail address, the keyword has to be mapped to a valid address. PSF uses a user-created PDF mapping program to map the keyword to the appropriate e-mail addresses. If the file specifies valid e-mail addresses, you do not need a PDF mapping program.
6. PSF uses the SNDDST command or the SMTP mail server that is specified on the PSF configuration object to send the reports to the managers.

Figure 4 shows how Infoprint Server lets you send multiple PDF files as e-mail.

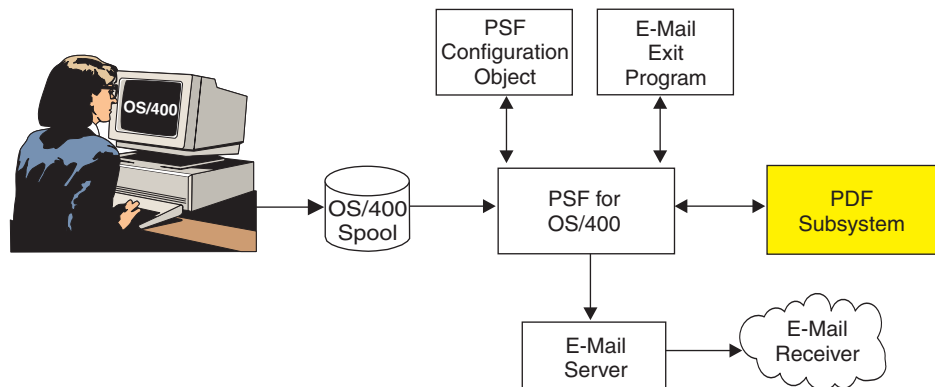


Figure 4. Electronic Report Distribution

Printing Enterprise Print Output on IPDS Printers

In this scenario, a business uses an enterprise resource planning software package to create and print its output in PCL format. They would like to direct their high volume print jobs to high-speed IPDS printers.

Here is how this business can use the Infoprint Server components to meet its requirements:

1. From a Windows workstation, a user submits the document for printing on an IPDS printer using a printer shared through NetServer.
2. The document is put on the OS/400 spool and then directed to Transform Manager.
3. Transform manager uses the PCL transform to transform the data to AFP.
4. The transform sends the AFP data to PSF for OS/400.
5. PSF submits the data for printing.

Figure 5 shows how Infoprint Server lets you print PCL, PDF, or PostScript documents from your workstation on IPDS printers.

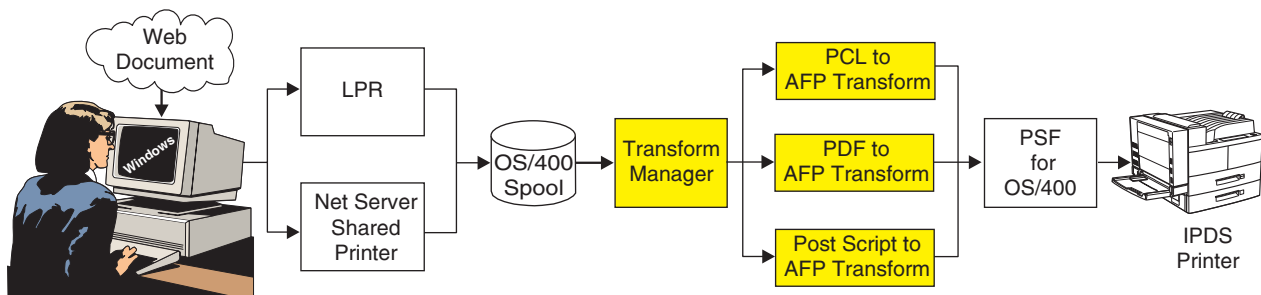


Figure 5. Printing documents from a Workstation on IPDS printers

Integrating Web and Network Images into iSeries Applications

A manufacturer has a drawing application on Windows NT that creates engineering drawings in JPEG format. The manufacturer wants to be able to use the same drawing on a work order, but the work order is a line of business (LOB) document produced by the iSeries.

Here is how the manufacturer can use Infoprint Server components to meet its requirements:

1. The user sends the JPEG file to the Windows-based image transform to create an AFP page segment.
2. Next, the user could use the AFP Manager component of iSeries Navigator to create the page segment in the iSeries. Alternatively, the user could use a network drive mapped to an iSeries to put the AFP output file in a shared folder, then use OS/400 commands to create it as a page segment on the iSeries.
3. A user application creates a spooled file that uses the new page segment.
4. The spooled file can now be sent to an IPDS printer or PSF can send it to Infoprint Server. Through Infoprint Server, you can send the job to a PCL or PDF printer, e-mail the output, or create a stream file in the integrated file system.

Figure 6 shows how Infoprint Server can transform images into AFP files.

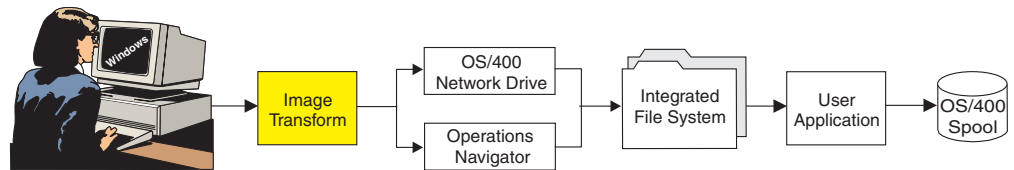


Figure 6. Transforming images into OS/400 resources

Indexing Data for Navigation

A telephone company creates customer statements by using the external formatting capabilities on the iSeries (page definitions and form definitions) together with AFP; this is called mixed data. This company wants its customer service representatives to be able to view the statements in the same format that the customer receives them. The company also wants the customer service representatives to be able to use the customer's name or phone number to quickly locate a customer's statement.

Here is how this company can use the Infoprint Server components to meet its requirements:

1. An application creates the data and puts it on the OS/400 spool.
2. The Create AFP Data (CRTAFPDTA) command generates the document as an AFP stream file and puts the indexing information in an index object stream file. It then gathers all of the needed resources into a resource stream file. Finally, it concatenates all three stream files into a merged stream file.
3. Users can now view the indexed file on their workstation.

Figure 7 shows how you can use Infoprint Server to index data.

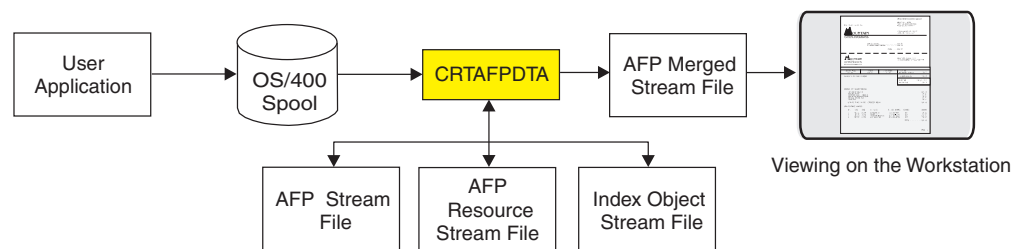


Figure 7. Indexing line, mixed, or AFP data

Distributing AFP Output Electronically

A company creates complex documents that contain page segments, overlays, and bar codes. The documents are then printed and distributed to users within their network and external clients. This company wants to be able to distribute the documents electronically. However, the documents require those external resources to be available in order to print or view correctly.

Here is how this company can use the Infoprint Server components to meet its requirements:

1. An application creates the data and puts it on the OS/400 spool.
2. The Create AFP Data (CRTAFPDTA) command generates the document as an AFP stream file and gathers all of the needed resources into a resource stream file. It then concatenates the AFP stream file and resources into a merged stream file.
3. Users can now view the merged file on their workstation, use the file on another system, or archive the file.

Figure 8 shows how you can use Infoprint Server to distribute AFP output electronically.

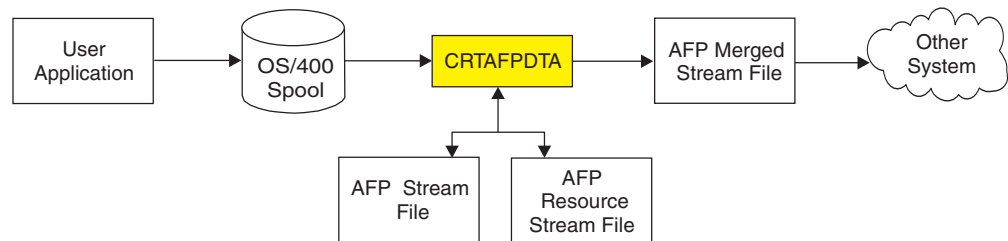


Figure 8. Packaging AFP data with its resources for electronic distribution

Chapter 3. Understanding the Infoprint Server Components

This chapter describes the Infoprint Server components. It describes how each component works and lists some of the benefits obtained through the component. Figure 9 shows the Infoprint Server components and how they fit into your system. The Infoprint Server components are shaded.

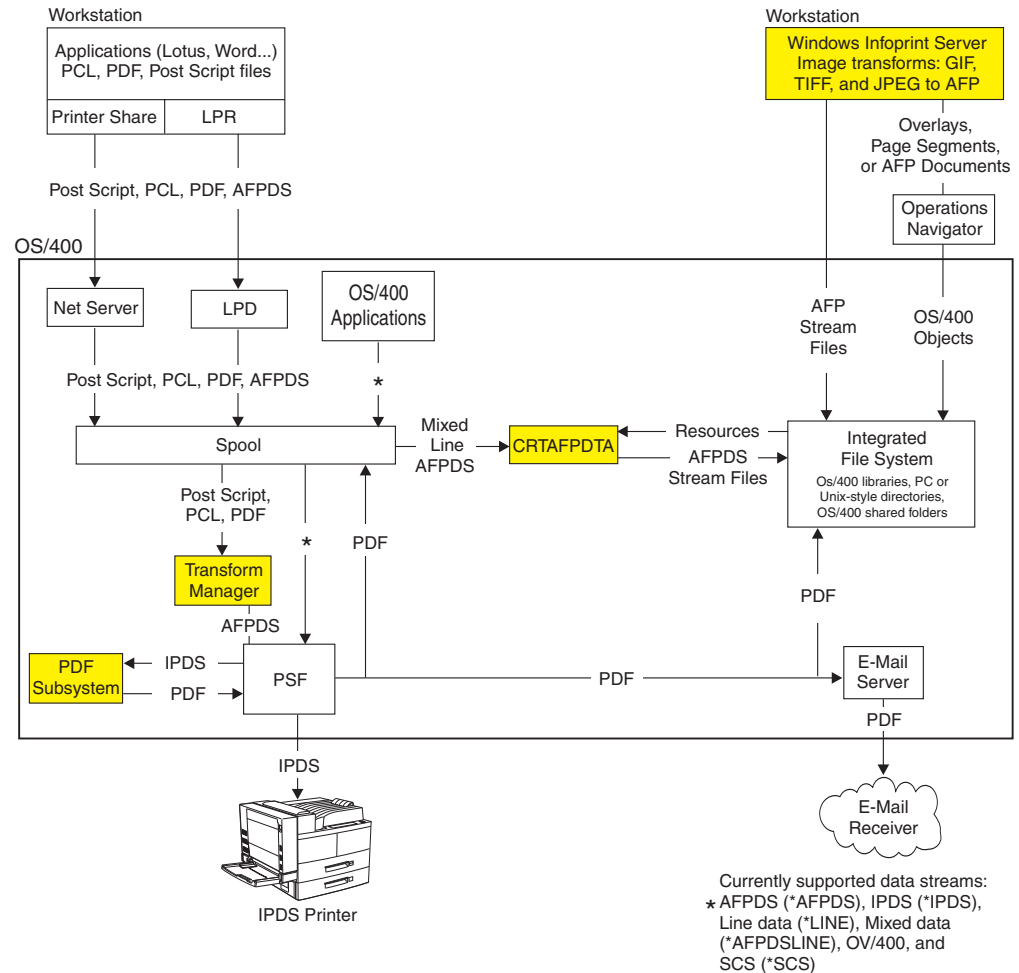


Figure 9. Infoprint Server Components.

PDF Subsystem

Infoprint Server lets you use the PDF subsystem to convert any standard format documents and reports on your iSeries to one or more Portable Document Format (PDF) files.

The PDF subsystem performs one of these functions with the output:

- Stores the output as a stream file in the integrated file system. This allows the file to be accessed by the Web, by an application, or accessed by a workstation using NetServer or iSeries Access.
- Prints it on a PDF printer.
- Sends it as e-mail.

Optionally, the PDF subsystem also works with group tags when they have been inserted into the data. You can use AFP Toolbox, the Create AFP Data (CRTAFPDTA) command, or DDS keywords to create group tags in the data. The PDF subsystem can process a file with group tags in one of two ways. It can convert the input data to one file with indexing tags at the group boundaries or break each group into a separate PDF file. This is essential, for example, for separating customer statements when they are all created from one job. After it goes through the PDF subsystem, each customer statement could be its own PDF file. Alternatively, you could use indexing information in one file to quickly navigate to each statement.

The PDF subsystem can transform any of these data types:

- IPDS
- SCS
- AFP
- Line data (externally formatted with page definitions and form definitions)
- Mixed data (line data that is mixed with AFP)
- OfficeVision/400

Note: Currently the PDF subsystem cannot transform 2D bar codes to PDF.

To call the PDF subsystem, specify a PSF configuration object with appropriate values on the device you want to print to. You can use OS/400 commands or the AFP Manager component of iSeries Navigator to create the PSF configuration object.

Some of the benefits the PDF subsystem provides are:

- Avoid rewriting applications
You can use existing applications to create documents in a new format. This lets you take advantage of the Web, e-mail, and a popular document format without a lot of costly overhead.
- Searchable output
The PDF output is actual text when the input file is text-based. This lets you use the standard Adobe Acrobat functions when you view the file, such as search and copy.
- Simple archival method
You can save all of your documents in organized PDF directories. Because any data stream that can be input to PSF can be transformed to PDF, your archive can consist of a single data type.
- Use ASCII printers when IPDS is not required
You can use Infoprint Server to print to PDF printers. PDF printing can provide fidelity and performance advantages over PCL. PDF output preserves fidelity without converting to image.

The PDF subsystem also enables e-mail support.

E-Mail Support

Using the PDF subsystem and PSF, Infoprint Server can e-mail PDF output. PSF uses the Send Distribution command (SNDDST) or an SMTP mail server (specified in the PSF configuration object) to send the e-mail.

Note: Although the PDF subsystem interacts with PSF to send e-mail, you do not need a PSF licence to use the subsystem.

The PDF subsystem can add index tags to the PDF file or convert the input data to multiple PDF files where you have inserted group tags. You can insert group tags with AFP Toolbox for AS/400, the Create AFP Data (CRTAFPDTA) command, or DDS keywords. Then you can use the e-mail support to send each output file to an e-mail address. This is essential, for example, for separating customer statements when they are all created from one job. PSF can e-mail each statement to the appropriate customer.

To use automatic e-mail support, you must associate e-mail addresses with the input files. You must also specify appropriate values in the PSF configuration object you specify in the device description associated with the printer writer. You can specify e-mail addresses in several ways:

- Specify e-mail addresses directly in the data.
- Specify e-mail addresses in the device description associated with the printer file.
- Specify e-mail keywords, such as customer IDs, in the data or in the printer file. Use an e-mail exit program (specified in the PSF configuration object) to map each keyword to one or more e-mail addresses.
- Specify e-mail tags in the printer file and use an e-mail exit program to map each tag to one or more e-mail addresses.

Some of the benefits the e-mail support provides are:

- Re-engineer business process
Infoprint Server e-mail support lets you substitute paper creation and distribution with electronic processes. This reduces costs and decreases cycle time. This also lets you implement new business-to-business and business-to-customer applications with output distributed in PDF format.
- Sales and marketing advantage
Businesses that use electronic output are easier to work with. This helps you remain competitive and increase sales.
- Avoid rewriting applications
You can use existing applications to create documents in a new format. This lets you take advantage of the Web, e-mail, and a popular document format without a lot of costly overhead.

PCL, PDF, and PostScript Transforms

Infoprint Server for iSeries can transform PCL 6, PDF 1.3, and PostScript level 3 data to image-based AFP data for printing on IPDS printers. This lets you print data directly from the Internet, client PCs, and other server nodes within your network on your iSeries-attached IPDS printers.

You can use LPR or NetServer to print the PCL, PDF, or PostScript file from your workstation on your OS/400 IPDS printer. NetServer lets you share an OS/400 printer with your Windows PC, then you can send data from your PC directly to the OS/400 printer. The jobs are automatically transformed using the job characteristics, such as paper size, that you specify. This lets you use all of the benefits of IPDS printing with PC files.

These transforms work just like an IPDS printer connected to your OS/400. To use them, you simply send a PCL, PDF, or PostScript job to the printer. Image print

transform and Transform Manager together determine the data stream and call the correct transform. Image print transform is already a part of your OS/400 system, but Transform Manager comes only with Infoprint Server for iSeries.

Transform Manager specifies how many transform jobs to initialize upon startup and when a new transform job should be started. It also specifies how many transform jobs of each type can be active.

In order to use the PCL, PDF, or PostScript to AFP transform, you need a 5.1 or higher OS/400, with the PASE feature installed. If you issue the STRTFMMGR command on a system that does not have PASE installed, a diagnostic message is issued and the Transform Manager does not start.

Some of the benefits these transforms provide are:

- IPDS support for ERP and ISV software output
These transforms let you print the most common types of ASCII output on IPDS printers. By printing on IPDS printers, you can take advantage of high speed, higher service levels, enterprise-class management, and guaranteed delivery.
- Reduce hardware costs
You can consolidate printing on faster iSeries attached printers instead of an uncontrolled network of personal and LAN printers. Personal and LAN printers have higher operating costs than iSeries printers.
- Reduce personnel costs
Infoprint Server on iSeries manages the printing and gives you a single control point for print management across the enterprise. These transforms give you the ability to fully manage printing.

Create AFP Data Command

The command Create AFP Data (CRTAFPDTA) lets you convert a line (*LINE) or mixed (*AFPDSL) data spooled file to AFP for printing, viewing, or archiving. It also lets you convert an AFP file that references resources to an AFP stream file packaged with all of the resources needed for printing or viewing.

Create AFP Data performs these functions:

- Converts line data or mixed data to AFP.
- Indexes a document to enhance your ability to view, archive, or retrieve individual pages or groups of pages from large documents.
For example, you could index a customer statement application using account numbers and names, then you could view or retrieve one customer's statement based on the name or account number.
- Retrieves and packages all AFP resources needed for printing or viewing a document.
- Creates a merged file that contains the AFP document, resources, and indexing information. This file can then be archived or used on other systems without loss of information.

You can input the following types of print data to this command:

- AFP
- Line (externally formatted with page definitions and form definitions)
- S/370™ line
- Mixed mode (line combined with AFP)

After Create AFP Data creates the output files, you can use them in these ways:

- Send the merged file to another system for printing, storage, or viewing.
- Use the AFP Workbench Viewer (a component of iSeries Access) or the AFP Viewer Plug-in to view the file. If the document references resources, view the merged file to guarantee resource availability.
- Store the merged file in a document archival system, such as IBM OnDemand for iSeries or Content Manager Common Server.
- Use your own retrieval system to access information in the files using retrieval information in the index object file.

Create AFP Data has these benefits:

- More flexibility with line data

Once you convert line data to AFP, you can view the converted document using the AFP Workbench Viewer or the AFP Viewer Plug-in. This flexibility lets you use the Infoprint Designer for iSeries for page formatting while you maintain the ability to view and print.

- Simple archival method

You can save the AFP merged file in organized directories so you can print with fidelity to the original document.

- Portable output

Packaging the output with the resources needed to print lets you use the merged file on other operating systems.

- Increased productivity

When working with large output files, indexing lets you quickly locate the necessary information, whether the document is archived or is being viewed.

Image Transforms

The image transforms are a set of transforms that run on a Windows system and transform the following types of data into AFP or PostScript Level 2:

- graphics interchange format (GIF)
- Joint Photographic Experts Group (JPEG)
- Tag Image File Format (TIFF)

You transform the data using commands on a Windows command line. You can have the transform create an AFP overlay or page segment. You can then use use iSeries Access or OS/400 commands to create overlays and page segments on your OS/400 from the output.

Some benefits of using the image transforms are:

- Use of images across platforms

These transforms let you integrate current image formats into iSeries applications

- Consistency

You can use the same images in your iSeries documents, workstation documents, and Web documents.

Chapter 4. Related Products

Following are some of the IBM products you can use with Infoprint Server:

- “Advanced Print Utility”
- “AFP Font Collection”
- “AFP Toolbox”
- “AFP Utilities” on page 24
- “AFP Viewer Plug-in” on page 24
- “Infoprint Designer for iSeries” on page 24
- “iSeries Access” on page 24

Advanced Print Utility

IBM Advanced Print Utility (APU) for iSeries (Program Number 5798-AF3) is a feature of AFP PrintSuite and Utilities for iSeries. It lets you transform your existing printed documents into dynamic electronic applications without making programming changes to your applications. APU is an application-independent tool that lets end-users convert SCS applications through a graphical interface.

For more information about APU, refer to this Web page:

<http://www.ibm.com/printers/R5PSC.NSF/Web/APU400Home>. For more information about AFP PrintSuite and Utilities for iSeries, refer to this Web page:
<http://www.ibm.com/printers/R5PSC.NSF/Web/AFPPrintSuiteHome>.

AFP Font Collection

The IBM AFP Font Collection (Program Number 5648-B33) contains a wide selection of AFP fonts. It is the recommended source of AFP fonts for printing with PSF and Infoprint Server.

<http://www.ibm.com/printers/R5PSC.NSF/Web/AFPFontHome>.

AFP Toolbox

AFP Toolbox (Program Number 5798-AF2 Feature 2703 for OS/400 V3R2 Program Number 5798-AF3 Feature 2803 for OS/400 V3R7) is a feature of AFP PrintSuite and Utilities for iSeries. It helps application programmers format printed output. Without requiring knowledge of the AFP data stream, AFP Toolbox provides access to sophisticated AFP functions through a callable C, C++, COBOL, or RPG interface. With AFP Toolbox you can accomplish these tasks:

- Combine variable data with electronic forms, electronic signatures, and images.
- Define variable length paragraphs.
- Draw boxes that have fixed or variable depth and width.
- Generate bar code objects.
- Draw horizontal and vertical fixed or variable length lines.
- Include indexing tags for use in viewing, archiving, and retrieving documents.
- Accent printed output with color and shading.
- Dynamically control fonts, including user-defined fonts.
- Precisely position and align text anywhere on a page in a wide variety of fonts.
- Create graphical data objects such as pie charts and bar charts.

- Create tables of any complexity.
- Draw circles, partial circles, ellipses, and partial ellipses.

AFP Toolbox is available on OS/390[®], z/OS[™], AIX, and OS/400 platforms.

For more information about AFP Toolbox, refer to this Web page:
<http://www.ibm.com/printers/R5PSC.NSF/Web/AFPToolHome>. For more information about AFP PrintSuite and Utilities for iSeries, refer to this Web page:
<http://www.ibm.com/printers/R5PSC.NSF/Web/AFPPrintSuiteHome>.

AFP Utilities

AFP Utilities for iSeries (Program Number 5769-AF1) can simplify the creation of advanced design documents. AFP Utilities is made up of three interactive, menu-driven utilities: Overlay, Print Format, and Resource Management. Overlay Utility lets you design AFP electronic forms directly on an OS/400. Print Format Utility lets you build AFP reports without any application program. Resource Management Utility helps manage electronic forms and image resources.

For more information about AFP Utilities for iSeries, refer to this Web page:
<http://www.ibm.com/printers/R5PSC.NSF/Web/AFPUilitiesHome>.

AFP Viewer Plug-in

The AFP Viewer plug-in displays documents that are in AFP format, such as documents downloaded from the OS/390 host or from the Web.

The AFP Viewer plug-in is available for Windows 95/98, Windows 2000, and Windows NT, and requires Netscape Navigator (Version 3.01 or higher) or Microsoft[®] Internet Explorer (Version 3.01, Level 4.70.1215 or higher). You can obtain the AFP Viewer plug-in at no extra charge from the IBM Printing Solutions for iSeries Web page: <http://www.ibm.com/printers/r5psc.nsf/web/as400overview>.

Infoprint Designer for iSeries

Infoprint Designer for iSeries (Program Number 5733-ID1) is designed to create electronic output that optimizes customer and mission-critical communications such as statements, invoices, labels, and supply chain management documents. The product makes it easy to change documents and customer communications quickly, which helps you be responsive to customer needs. For more information, refer to this Web page: <http://www.ibm.com/printers/R5PSC.NSF/Web/ipdesignerHome>.

Infoprint Designer runs on Windows 95, Windows 98, Windows NT, and Windows 2000.

iSeries Access

IBM iSeries Access for Windows (Program Number 5722-XW1) provides PC-to-iSeries connectivity. It provides a single solution to meet the desktop user's needs, such as working with databases or other data stored on the server, running 5250 applications, or administering the iSeries environment. Through the iSeries Navigator and AFP Workbench Viewer components, you can manage AFP resources and view AFP files. For more information, refer to this Web page: <http://www.ibm.com/servers/eserver/iseries/access/>.

iSeries Access runs on Windows XP Professional, Windows 2000, Windows ME, Windows98, Windows NT 4.0, and Windows 95.

iSeries Navigator

iSeries Navigator, a component of iSeries Access, is the graphical user interface for managing your iSeries servers. iSeries Navigator makes operation and administration of the server easier and more productive. For instance, you can copy a user onto another system by dragging the user from one server to the other. Wizards guide you through setting up security, TCP/IP, and more.

The AFP Manager plug-in to iSeries Navigator lets you manage your AFP resources, PSF configuration objects, and font mapping tables. iSeries Navigator gives you one-step access to the Infoprint Manager PDF subsystem. This lets you convert a spooled file to PDF and e-mail it, store it as a stream file, or put it on an output queue. For more information about iSeries Navigator, refer to this Web page http://www.ibm.com/servers/eserver/iseries/oper_nav/.

iSeries Navigator runs on Windows XP Professional, Windows 2000, Windows ME, Windows98, Windows NT 4.0, and Windows 95.

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Glossary

This glossary defines technical terms and abbreviations used in Infoprint Server documentation. If you do not find the term you are looking for, refer to the index of this publication or view *IBM Dictionary of Computing*, located at:

<http://www.ibm.com/networking/nsg/nsgmain.htm>

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Definitions that are specific to IBM products are so labeled—for example, “In SNA,” or “In the 3820 printer.”

These cross-references are used in this glossary:

- **Contrast with.** Refers to a term that has an opposite or substantively different meaning.
- **See.** Refers to multiple-word terms in which this term appears.
- **See also.** Refers to related terms that have similar, but not synonymous, meanings.
- **Synonym for.** Appears in the commentary of a less desirable or less specific term and identifies the preferred term that has the same meaning.

- **Synonymous with.** Appears in the commentary of a preferred term and identifies less desirable or less specific terms that have the same meaning.

A

Advanced Function Presentation™ (AFP). A set of licensed programs, together with user applications, that use the all-points-addressable concept to print on presentation devices. AFP includes creating, formatting, archiving, retrieving, viewing, distributing, and printing information. See *presentation device*.

AFP. See *Advanced Function Presentation*.

AFP data stream. A presentation data stream that is processed in the AFP environment. MO:DCA-P is the strategic AFP interchange data stream. IPDS is the strategic AFP printer data stream.

AFP Workbench Viewer. (1) An OS/2® or Windows IBM-licensed PC product that lets you see AFP output in a WYSIWYP (what-you-see-is-what-you-print) format. (2) An OS/2 or Windows platform for the integration of AFP-enabling applications and services.

AFPDS. A term formerly used to identify the composed page, MO:DCA-P-based data stream interchanged in AFP environments.

anchor. The point in a document that signals to CRTAFPDTE the beginning of a group of pages, after which it adds indexing structured fields to delineate this group.

architecture. The set of rules and conventions that govern the creation and control of data types such as text, image, graphics, font, fax, color, audio, bar code, and multimedia.

ASCII. American National Standard Code for Information Interchange data encoding, which is the normal (default) type of data encoding in an AIX environment. Contrast with *EBCDIC*.

B

Bar Code Object Content Architecture (BCOCA). An architected collection of control structures used to interchange and present bar code data.

BCOCA. See *Bar Code Object Content Architecture*.

bin. A paper supply on a cut-sheet printer. See also *cassette*.

C

carriage control character. An optional character in an input data record that specifies a write, space, or skip operation.

cassette. In a cut-sheet printer, a movable enclosure for paper supply. See also *bin*.

character. (1) A symbol used in printing. For example, a letter of the alphabet, a numeral, a punctuation mark, or any other symbol that represents information. (2) A byte of data.

coded font. A font library member that associates a code page and a font character set. For double-byte fonts, a coded font associates more than one pair of code pages and font character sets.

code page. A font component that associates code points with character identifiers. A code page also identifies how undefined code points are handled.

code point. A one-byte code representing one of 256 potential characters.

concatenate. (1) To link together. (2) To join two character strings.

concatenated data set. In iSeries, a group of logically connected data sets that are treated as a single data set for the duration of a job step. See also *data set*.

continuous forms. A series of connected forms that feed continuously through a printing device. The connection between the forms is perforated to enable a user to tear them apart. Before printing, the forms are stacked, folded along the perforations. Contrast with *cut-sheet paper*.

control character. A character that starts, changes, or stops any operation that affects recording, processing, transmitting, or interpreting data (such as carriage return, font change, and end of transmission).

cut-sheet paper. Paper that is cut into separate sheets before it is printed on. Contrast with *continuous-forms paper*.

D

| **data description specifications.** A description of the
| user's database or device files that is entered into the
| system in a fixed form. The description is then used to
| create files.

data set. A named set of records stored and processed as a unit. Synonym for *file*.

data stream. (1) All information (data and control commands) sent over a data link, usually in a single read or write operation. (2) A continuous stream of data

elements being transmitted, or intended for transmission, in character or binary-digit form, using a defined format.

default. An attribute, value, or option that is assumed when none is explicitly specified. (I)

| **DDS.** See data description specifications

document. (1) A publication or other written material pertaining to a specific subject or related subjects. (2) In word processing, a collection of one or more lines of text that can be named and stored as a separate entity.

double-byte coded font. A font in which each character is defined by two bytes, of which the first defines a coded font section, and the second defines a code point in that section. Double-byte coded fonts are needed for the support of languages requiring more than 256 graphic characters; two bytes are required to identify each graphic character. Kanji is printed by using a double-byte font. Contrast with *single-byte coded font*.

download. To transfer data from a processing unit to an attached device such as a microcomputer for processing.

duplex printing. Printing on both sides of a sheet of paper. Contrast with *simplex printing*.

E

EBCDIC. Extended binary-coded decimal interchange code.

electronic overlay. A collection of constant data, such as lines, shading, text, boxes, or logos, that is electronically composed in the host processor and stored in a library, and that can be merged with variable data during printing. Contrast with *page segment*. See also *overlay*.

enabled. (1) Pertaining to a state of the processing unit that allows certain types of interruption. (2) A condition of the printer (physically selected) in which the printer is available to the host processor for normal work. Contrast with *disabled mechanism*.

end-user interface. A method by which a customer can obtain the services of a product, for example, coding samples, commands and command lists. Every product does not have an end-user interface; some products provide their services through programming interfaces, some provide services through a command line interface, and others provide their services only to other products.

escape character. The control character X'2BD3' in a text-control sequence that indicates the beginning of the sequence and the end of any preceding text.

euro. The monetary unity of the European Monetary Union (EMU), introduced alongside national currencies on the first of January, 1999.

EuroReady product. A product is EuroReady if the product, when used in accordance with its associated documentation, is capable of correctly processing monetary data in the euro denomination, respecting the euro currency formatting conventions (including the euro sign). This assumes that all other products (for example, hardware, software, and firmware) that are used with this product are also EuroReady. IBM hardware products that are EuroReady might or might not have an engraved euro sign key on their keyboards.

exception. A condition that exists when the printer:

- Detects an invalid or unsupported command, order, control, or parameter value from the host
- Finds a condition of which the host system must be notified
- Detects a condition that requires the host system to re-send data

exception highlighting. The markings placed on the printed page to indicate the location of an error in the data stream.

execution. The process of carrying out an instruction or instructions of a computer program by a computer. (I) (A)

extended binary-coded decimal interchange code (EBCDIC). A coded character set of 256 eight-bit characters.

F

font. A family or assortment of characters of a given size and style; for example, 9-point Bodoni Modern. (A)

font character set. Synonym for *character set*.

form. A division of the physical medium; multiple forms can exist on a physical medium. For example, a roll of paper might be divided by a printer into rectangular pieces of paper, each representing a form. An envelope is an example of a physical medium that has only one form. The IPDS architecture defines 4 types of form: cut-sheets, continuous forms, envelopes, and computer output on microfilm. Each type of form has a top edge, a front side, and a back side. Synonymous with *sheet*.

format. (1) A specified arrangement of such things as characters, fields, and lines, usually used for displays, printouts, or files. (2) To arrange such things as characters, fields, and lines. (3) To prepare a document for printing in a specified format.

form definition. A resource that PSF uses to define the characteristics of a form; it specifies overlays to be used (if any), paper source (for cut-sheet printers),

duplex printing, text suppression, the position of MO:DCA data on the form, and the number of copies and modifications of a page.

G

GOCA. See *Graphic Object Content Architecture*.

Graphic Object Content Architecture (GOCA). An architecture that provides a collection of graphics values and control structures used to interchange and present graphics data.

group. A named collection of sequential pages that form a logical subset of a document.

H

hardcopy. (1) A copy of a display image that is generated on an output device such as a printer or plotter and that can be carried away. (T) (2) A printed copy of machine output in a visually readable form, for example, printed reports, listings, documents, and summaries.

hexadecimal. Pertaining to a numbering system with base of 16; valid numbers use the digits 0 through 9 and characters A through F, where A represents 10 and F represents 15.

host font. See *host resource*.

host processor. The processing unit to which the page printers are attached through a data-transfer interface.

host resource. A resource found in a system library, in a user library, or inline in the print data set.

host system. (1) A data processing system that prepares programs and operating environments for another computer or controller. (2) The data processing system to which a network is connected and with which the system can communicate.

I

image. A pattern of toned and untoned pels that form a picture.

image data. A pattern of bits, with values of 0 and 1, that defines the pels in an image. (A 1-bit is a toned pel.)

Image Object Content Architecture (IOCA). An architected collection of constructs used to interchange and present images.

indexing. In CRTAFPDTA, a process of matching reference points within a file and creating structured field tags within the MO:DCA document and the separate index object file.

indexing with data values. Adding indexing tags to a MO:DCA document using data that is already in the document and that is consistently located in the same place in each group of pages.

indexing with literal values. Adding indexing tags to a MO:DCA document by assigning literal values as indexing tags, because the document is not organized such that common data is located consistently throughout the document.

index object file. A file created by CRTAFPDTA that contains Index Element (IEL) structured fields, which identify the location of the tagged groups in the AFP file. The indexing tags are contained in the Tagged Logical Element (TLE) structured fields.

Infoprint Manager for iSeries. A software component of IBM Infoprint. IBM Infoprint Manager for iSeries handles the scheduling, archiving, retrieving, and assembly of a PCL, PDF, or PostScript to AFP transform job and its related resource files.

IOCA. See *Image Object Content Architecture*.

initialize. (1) In programming languages, to give a value to a data object at the beginning of its lifetime. (I) (2) To set counters, switches, addresses, or the contents of storage to zero or other starting values at the beginning of, or at prescribed points in the operation of, a computer routine. (A) (3) To prepare for use; for example, to initialize a diskette.

inline. The direction of successive characters in a line of text. Synonymous with *inline direction*.

inline direction. The direction of successive characters in a line of text.

inline resource. A resource contained in the print data set.

input/output (I/O). Pertaining to a device whose parts can perform an input process and an output process at the same time. (I)

Intelligent Printer Data Stream (IPDS). (1) The data stream generated by PSF to send to an IPDS page printer. (2) An all-points-addressable data stream that enables users to position text, images, and graphics at any defined point on a printed page.

interface. A shared boundary. An interface can be a hardware component used to link two devices, or it can be a portion of storage or registers accessed by two or more computer programs.

I/O. Input/output.

IPDS. See *Intelligent Printer Data Stream*.

L

library. A file or a set of related files, for example, a page definition library containing one or more page definition files.

licensed program. A utility that performs a function for the user and usually interacts with and relies upon system control programming or some other IBM-provided control program. A licensed program contains logic related to the user's data and is usable or adaptable to meet specific requirements.

line data. Data prepared for printing on a line printer such as an IBM 3800 Printing Subsystem Model 1. Line data is usually characterized by carriage control characters and table reference characters. Contrast with *MO:DCA-P*. It is externally formatted with page definitions and form definitions.

line printer. A device that prints a line of characters as a unit. (I) (A) Contrast with *page printer*.

logical page. A presentation space. One or more object areas or data blocks can be mapped to a logical page. A logical page is rectangular and has specifiable characteristics such as size, shape, orientation, and offset. Orientation and offset are specified relative to a coordinate system for the medium.

logical page origin. (1) The point on the logical page from which the positions of images, graphics, page overlays, and text with 0-degree inline direction are measured. (2) The point on the logical page represented by Xp=0, Yp=0 in the Xp coordinate system.

M

macro. Synonym for *macroinstruction*.

macroinstruction. An instruction that causes the execution of a predefined sequence of instructions.

Microfilm device. An output device that presents a hardcopy on microfilm.

migration. Activities that relate to the installation of a new version or release of a program to replace an earlier level. Completion of these activities ensures that the applications and resources on your system will function correctly at the new level.

Mixed Object Document Content Architecture. A strategic, architected, device-independent data stream for interchanging documents.

MO:DCA. See *Mixed Object Document Content Architecture*.

MO:DCA data. Print data that has been composed into pages. Text-formatting programs such as DCF can produce composed text data consisting entirely of structured fields.

MO:DCA data page. A page of print data consisting entirely of structured fields.

MO:DCA print data set. A print data set consisting entirely of structured fields.

MO:DCA-P. Mixed Object Document Content Architecture for Presentation.

N

nested resource. A resource mapped in an overlay.

O

OS/400. The iSeries operating system.

outline font. A font technology in which the graphic character shapes are represented in digital form by a series of mathematical expressions that define the outer edges of the strokes. The resulting graphic character shapes can be either solid or hollow. Outline fonts can be scaled (sized) to any size. The IBM outline font character sets have a prefix of CZ. Contrast with *raster font*.

overlay. See *electronic overlay*.

P

page. A collection of data that can be printed on a physical sheet of paper.

page segment. A resource containing MO:DCA data and images, prepared before formatting and included as part of the input for a print job.

parameter. (1) A variable that is given a constant value for a specified application and that may denote the application. (I) (A) (2) An item in a menu for which the user specifies a value or for which the system provides a value when the menu is interpreted. (3) Data passed between programs or procedures.

pel. See *picture element*.

physical medium. A physical entity on which information is presented. Examples of physical media are display screens, paper, foils, microfilm, and labels.

picture element. An element of a raster pattern about which a toned area on the photoconductor might appear. See also *raster pattern*. Synonym for *pel*.

point. A unit of measurement about 1/72 of an inch; used in measuring the height of a font. Contrast with *pitch*.

point size. The height of a font in points.

print job. The data that a user submits to PSF for printing.

Print Services Facility (PSF). PSF is a licensed IBM program that manages and controls the input data stream and output data stream required by supported IBM page printers. PSF manages printer resources such as fonts, images, electronic forms, form definitions, and page definitions, and provides error recovery for print jobs.

When printing line data, PSF supports external formatting using page definitions and form definitions. This external formatting extends page printer functions such as electronic forms and use of typographic fonts without any change to applications programs.

printable area. The area on a sheet of medium on which print can be placed.

printer. A presentation device that produces hardcopy output. See *presentation device*.

processor. In a computer, a functional unit that interprets and executes instructions. (I) (A)

PSF. See *Print Services Facility*.

R

raster font. A font technology in which the graphic characters are defined directly by the raster bit map. Contrast with *outline font*.

record format line data. A form of line data where each record is preceded by a 10-byte identifier.

resolution. In computer graphics, a measure of the sharpness of an image, expressed as the number of lines and columns on the display screen or the number of pels per unit of linear measure.

resource. (1) A collection of printing instructions used by PSF in addition to the print data set to produce printed output. PSF resources include coded fonts, font character sets, code pages, page segments, overlays, form definitions, and page definitions. (2) Any source of aid used for performing a task, such as disk storage space, computer processing time, and communication lines.

resource name. The name under which a resource object is stored, the first two characters of which indicate the resource type:

X0-XG,XZ	Coded font
T1	Code page
C0-CG,CZ	Font character set

S1	Page segment
F1	Form definition
P1	Page definition
O1	Overlay
H1	Recommended for microfilm

rotation. The number of degrees a graphic character is turned relative to the page coordinates.

S

segment. Synonym for *page segment*.

sheet. A division of the physical medium on which data is presented. The IPDS architecture defines 4 types of sheet: cut-sheet forms, continuous forms, envelopes, and computer output on microfilm. Each sheet has a front side and a back side. Some types of media consist of multiple sheets; for example, a roll of continuous forms can be divided at the perforations into rectangular sheets. Each sheet usually has carrier or tractor-feed strips, also. Microfilm is another example of a medium comprising multiple sheets, whereas an envelope has only one sheet. Synonymous with *form*.

simplex printing. Printing on only one side of the paper. Contrast with *duplex printing*.

single-byte coded font. A font in which the characters are defined by a one-byte code point. A single-byte coded font contains only one coded font section. Contrast with *double-byte coded font*.

spooled file. A file created by an application program that contains the actual information to be printed and some of the data that controls the format of the printing. Spooled files can contain MO:DCA-P data, line data, or a combination of MO:DCA-P and line data.

structured field. A self-identifying, variable-length, bounded record that can have a content portion that provides control information, data, or both.

syntax. The rules and keywords that govern the use of a programming language.

T

table reference characters (TRC). An optional control character in an input record that identifies the font with which the record is to be printed. The table reference character corresponds to a font number defined in a page definition font list or to the order of font names listed in the CHARS parameter in the JCL.

tag. A type of structured field used for indexing in an AFP document. Tags associate an index attribute - value pair with a specific page or group of pages in a document.

terminate. (1) To stop the operation of a system or device. (2) To stop execution of a program.

text. A graphic representation of information on an output medium. Text can consist of alphanumeric characters and symbols arranged in paragraphs, tables, columns, or other shapes.

token ring. A network configuration in which tokens are passed in a circuit from node to node. A node that is ready to send can capture the token and insert data for transmission.

trace. A record of the execution of a computer program. It exhibits the sequences in which the instructions were executed. (A)

TRC. See *table reference character*.

trigger. Data values for which CRTAFPDTA searches, to delineate the beginning of a new group of pages. The first trigger is then the anchor point from which CRTAFPDTA locates the defined index values. See *anchor point*.

U

upload. (1) To transfer programs or data from a connected device, typically a personal computer, to a computer with greater resources. (T) (2) To transfer data from a device, such as a workstation or a microcomputer, to a computer. Contrast with *download*.

V

Viewer. See *AFP Workbench Viewer*.

X

X-axis. In printing, an axis perpendicular to the direction in which the paper moves through the printer. See also *Y-axis*.

X-extent. A measurement along the X-axis.

Y

Y-axis. In printing, an axis parallel to the direction in which the paper moves through the printer. See also *X-axis*.

Y-extent. A measurement along the Y-axis.

Bibliography

This bibliography lists the titles of publications containing additional information about Infoprint Server for iSeries, the OS/400 operating system, Advanced Function Presentation, and related products.

The titles and order numbers may change from time to time. To verify the current title or order number, consult your IBM marketing representative.

You can obtain many of the publications listed in this bibliography from the Printing Systems Digital Library: <http://www.ibm.com/printers/r5psc.nsf/web/manuals> or the Online Publications Website: <http://publib.boulder.ibm.com/>

Infoprint Server

Publication	Order Number
<i>Infoprint Server for iSeries: User's Guide</i>	G544-5775-01
<i>Infoprint Server for iSeries: Introduction and Planning Guide</i>	G544-5774-01

Advanced Function Presentation (AFP)

Publication	Order Number
<i>Guide to Advanced Function Presentation</i>	G544-3876
<i>Printing and Publishing Cluster Collection CD-ROM</i>	SK2T-2921

iSeries Access

Publication	Order Number
<i>iSeries Access for Windows--Setup</i>	SC41-5507-03
<i>LPS: AS/400 Client Access Family for Windows</i>	GC41-5041-02
<i>LPS: Client Access Ultimeia Tools for AS/400</i>	GC41-4075-00

Infoprint Designer

Publication	Order Number
<i>Infoprint Designer for iSeries: Getting Started</i>	G544-5773-00

OS/400

Publication	Order Number
<i>AS/400 Guide to Advanced Function Presentation and Print Services Facility</i>	S544-5319-03
<i>AS/400 Command Language Reference</i>	SC41-3722
<i>DDS Reference</i>	SC41-5712
<i>Printer Device Programming</i>	SC41-5713-05
<i>Software Installation</i>	SC41-5120-06
<i>System API Programming</i>	SC41-5800-00

Printers

Publication	Order Number
<i>IBM Printing Systems: Printer Summary</i>	S544-5749
<i>IBM PagePrinter 3812 Introduction and Planning Guide</i>	G544-3265
<i>IBM LaserPrinter 4028 Introduction and Planning Guide</i>	S544-4258
<i>IOCP and ESCON[®] Reference</i>	GC38-0401

PrintSuite

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<i>APU Guide for PrintSuite</i>	S544-5351
<i>SAP/R3 Guide for PrintSuite</i>	S544-5412
<i>Page Printer Formatting Aid: User's Guide</i>	S544-5284-06
<i>AFP Toolbox for Multiple Operating Systems User's Guide</i>	S544-5292

Redbooks

Publication	Order Number
<i>IBM AS/400 Printing V</i>	SG24-2160
<i>IBM @server iSeries Printing VI: Delivering the Output of e-business</i>	SG24-6250

TCP/IP

Publication	Order Number
<i>Internetworking with TCP/IP, Principles, Protocols, and Architecture</i>	SC31-6144
<i>TCP/IP Tutorial and Technical Reference</i>	GG24-3376
<i>TCP/IP Configuration and Reference</i>	SC41-5420-04

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