

InfoPrint Manager for Windows: Procedures

Version 2 Release 3

G550-1073-02

InfoPrint Manager for Windows: Procedures

Version 2 Release 3

G550-1073-02

Note:

Before using this information and the product it supports, read the information in "Notices" on page 343.

Third edition (September 2009)

This edition applies to InfoPrint Manager for Windows, Version 2 Release 3 Modification 0 with PTF UO00918 and to all subsequent releases and modifications until otherwise indicated in new editions.

This edition replaces G550-1073-01.

Internet

Visit our home page: <http://www.infoprint.com>

You can send comments by e-mail to printpub@infoprint.com or by mail to:

InfoPrint Solutions Company
6300 Diagonal Hwy 002J
Boulder, CO 80301-9270
U.S.A.

This product is or contains commercial computer software and commercial computer software documentation developed exclusively at private expense. As specified in Federal Acquisition Regulation 12.212 in the case of civilian agencies and Defense Federal Acquisition Regulation Supplement 227.7202 in the case of military agencies, use, duplication and disclosure by agencies of the U.S. Government shall solely be in accordance with the accompanying International Program License Agreement in case of software products and in accordance with the licensing terms specified in the product's documentation in the case of hardware products.

© Copyright InfoPrint Solutions Company 1999, 2009.

Contents

Figures ix

Tables xi

Part 1. Introduction 1

Chapter 1. About this publication 3

Who should read this publication 3

Most recent information 3

Chapter 2. The InfoPrint publication library 5

InfoPrint Manager common publication library 5

InfoPrint Manager for AIX publication library 5

InfoPrint Manager for Windows publication library 6

Related publications 6

Part 2. Administrative Procedures: Configuring InfoPrint Manager. 7

Chapter 3. Using Multiple Network Adapter Cards 9

Chapter 4. Selecting a type of actual destination 11

PC-based applications or a host system using IP

Printway 11

MVS Download, DPF, or a combination of PC-based

applications and host systems 12

PSF attachment types 13

Chapter 5. Managed IPDS Dialog support 15

Enabling MID support. 15

Considerations to activate MID support 15

Chapter 6. Using the Internet Printing Protocol (IPP) with InfoPrint Manager 17

Printing to an IPP-enabled printer. 17

Printing through the IPP Gateway. 17

Chapter 7. Using InfoPrint Manager notifications 19

Understanding notification profiles 19

Event identifiers. 20

Delivery method and delivery address 20

Using the 'exit' delivery method 24

Default notification profiles 24

Using notification profiles with default jobs 26

Changing notification profiles 26

For jobs, default jobs, servers, queues, and actual destinations 26

For logical destinations 27

Viewing an existing notification profile 27

Adding or modifying events or users in a

notification profile 28

Removing users from a notification profile 29

Changing the delivery method 30

Getting help for notification messages 31

Other notification methods 31

Notify-operator attribute 31

Chapter 8. Managing security 33

Types of permission 33

Security groups 35

Identifying users and groups: wildcarding 36

Working with ACLs and groups 36

Chapter 9. Customizing error logs in the InfoPrint Manager Windows server 37

Customizing an InfoPrint Manager server error log 37

Customizing a Notification server error log. 38

Chapter 10. Monitoring disk use 41

Adjusting your server notification profile for disk

usage 42

Disks monitored by InfoPrint Manager 42

Chapter 11. Administering your InfoPrint Manager server using a Windows Terminal Server client 43

Installing the Windows Terminal Server client. 43

Chapter 12. Changing the server hostname and IP address 45

Changing the server hostname and IP address. 45

Changing the hostname of a non-namespace server 46

Changing only the server IP address 47

Chapter 13. Setting up your InfoPrint Manager server to use resources on a different Windows system 49

Giving InfoPrint Manager access to remote resources 49

Using Windows 2000/2003 49

Preparing for shared resources with MVS

Download. 51

Telling InfoPrint Manager where your remote

resources are located 51

Chapter 14. Working with SNMP printers 53

About SNMP communication 53

Smart-defaulting actual destination attributes 53

| | |
|--|----|
| Detecting, reporting, and recovering from printer problems | 54 |
| Accessing device information | 55 |
| Changing device information | 56 |
| Setting up and using SNMP | 56 |
| Determining if a printer works with SNMP | 57 |
| Using the InfoPrint Manager Administration Interface | 57 |
| Procedures | 57 |
| Effects on performance with SNMP | 59 |
| Server start-up | 59 |
| Actual destination queries | 59 |
| SNMP polling | 59 |

Chapter 15. Creating and managing resource-context objects 61

| | |
|--|----|
| The search order for AFP resources | 62 |
| CMRs and data objects search order | 64 |
| File extensions for resources | 66 |
| Processing resources installed with Resource Access Tables | 68 |
| Creating a new resource-context object | 68 |
| Changing a directory path for a resource-context object | 69 |

Chapter 16. Using PSF DSS user-exit programs 71

| | |
|---|----|
| Supported types of PSF DSS user-exits | 71 |
| Sample PSF DSS user-exit programs | 72 |
| Creating and using your own PSF DSS user-exit programs | 74 |
| Compiling and installing the user-exit program | 74 |
| Activating the user-exit program | 74 |
| User-exit program structures | 75 |
| Common input and output fields | 76 |
| The header page and trailer page user-exit programs | 79 |
| The separator page user-exit program | 79 |
| Accounting, post-print accounting, and audit user-exit program inputs and outputs | 80 |
| Fields that provide information for accounting, audit, and post-print accounting user-exit programs | 81 |
| Input data user-exit program inputs and outputs | 83 |
| Output data user-exit program inputs and outputs | 85 |
| Structure of a user-exit program | 86 |
| User-exit programs for the line data transform | 86 |
| apka2e | 87 |
| asciinp.c | 87 |
| asciinpe.c | 87 |
| Input record exit | 88 |
| Output record exit | 90 |
| Resource exit | 91 |
| Non-zero return codes | 93 |
| Attributes of the line data input file | 93 |
| Using the uconv command to convert coded character sets | 94 |

Chapter 17. Creating and managing auxiliary sheets and PSF DSS user-exit programs 97

| | |
|--|-----|
| Preparing to work with auxiliary sheets | 97 |
| Terms relating to auxiliary sheets | 97 |
| InfoPrint default auxiliary-sheet objects | 98 |
| Sequence of user-exit programs | 103 |
| Directory locations of user-exit programs supplied with InfoPrint Manager | 103 |
| Creating and configuring auxiliary sheet objects | 105 |
| Creating new auxiliary-sheet objects using the pdcreate command | 105 |
| Associating auxiliary-sheet objects with PSF printers | 106 |
| Activating auxiliary sheets for accounting or audit information | 106 |
| Associating the post-print accounting user-exit program with an actual destination | 106 |
| Associating an input data user-exit program with an actual destination | 107 |
| Associating an output data user-exit program with an actual destination | 107 |
| Using Interrupt Message Pages | 107 |
| Activating IMPs | 108 |

Chapter 18. Gathering accounting and audit data about print jobs. 111

| | |
|--|-----|
| Working with InfoPrint Manager server accounting information | 111 |
| How does the pdaccount command collect InfoPrint Manager accounting information? | 111 |
| How do you manage the InfoPrint Manager accounting logs? | 113 |
| Usage considerations by DSS for accounting information | 114 |
| Working with PSF accounting, post-print accounting, and audit data about the job | 116 |
| What do the accounting, post-print accounting, and audit PSF DSS user exits provide? | 117 |
| How do you format accounting, post-print accounting, and audit data for viewing? | 119 |
| How do you manage the contents of the data files? | 119 |

Chapter 19. Using the InfoPrint Manager line printer daemon (LPD) . . . 121

Chapter 20. Using the InfoPrint Manager System Migration (ismu) Utility 123

| | |
|---|-----|
| Supported operating environments | 123 |
| Prerequisites | 124 |
| Migrating your InfoPrint Manager settings | 124 |
| Automatic process | 124 |
| Manual process | 126 |
| Specific tasks during migration | 126 |

Chapter 21. Setting up interoperating environments 133

| | |
|--|-----|
| Understanding interoperating environments | 133 |
| Reasons for setting up an interoperating environment | 133 |

| | |
|--|-----|
| Multiserver configuration examples | 134 |
| Important issues in interoperating environments | 134 |
| Setting up a print environment with multiple Windows servers | 135 |
| Configuration example | 136 |
| Configuring for interoperability between an InfoPrint AIX server and an InfoPrint Windows server | 138 |
| Setting up the InfoPrint AIX server for interoperability | 138 |
| Configure Windows servers for interoperability | 141 |
| Installing MS Services for UNIX on the InfoPrint Windows servers | 141 |

Part 3. Administrative Procedures: Configuring for Host Printing . . . 147

Chapter 22. Setting up to use MVS Download 149

| | |
|--|-----|
| Configuring MVS Download | 149 |
| Setting up a default MVS Download configuration | 150 |
| Understanding and using the MVS Download destination control file | 151 |
| Understanding the MVS Download Exit Program | 161 |
| Creating an MVS Download Receiver | 163 |
| Making your AFP resources available to InfoPrint Manager | 166 |
| Submitting multiple data set jobs | 169 |
| Displaying the page count for your MVS Download jobs | 172 |
| Performance considerations with the Direct Download method | 173 |

Chapter 23. Using the Distributed Print Facility (DPF) 175

Part 4. Administrative Procedures: Customizing for Special Jobs . . . 177

Chapter 24. Working with transforms 179

| | |
|---|-----|
| Customizing the PCL, PostScript, and PDF transforms | 180 |
| Sample configuration file | 180 |
| Daemon configuration files | 181 |
| Hierarchy of transform options | 181 |
| Stapling and punch options available from the ps2afp transform | 181 |
| Specifying finishing in the ps2afpd.cfg file | 182 |
| Staple and punch operations supported by the ps2afp transform | 183 |
| Customizing the img2afp transform | 186 |
| Limitations of the img2afp transform | 188 |
| Examples | 188 |
| Customizing the TIFF, JPEG, and GIF transforms | 189 |
| Sample configuration file | 189 |
| Hierarchy of transform options | 190 |

| | |
|--|-----|
| Working with the transform for line data | 190 |
| What is line data? | 190 |
| What are ANSI and machine carriage controls? | 191 |
| What are variable-length and fixed-length files? | 192 |
| How does the imageout keyword affect processing? | 193 |
| Customizing the line data transform. | 194 |
| Working with the transform for double byte text streams | 195 |
| What are DBCS ASCII and EUC? | 195 |
| What font resources are needed to print DBCS ASCII and EUC? | 196 |
| Determining what code page your print jobs use and setting the correct environment variable | 196 |
| Working with the InfoPrint PPML transform program | 197 |
| Customizing the PPML transform | 198 |
| Working with the XML transforms | 199 |
| Using the XML transforms with InfoPrint Manager | 199 |
| How do the XML transforms work? | 200 |
| Running the XML transforms | 201 |
| Capabilities and limitations. | 201 |
| Customizing the XML transforms | 203 |
| Color management resource transform support | 206 |
| Submitting job using transforms for color management | 206 |

Chapter 25. Understanding transforms and the configurable transform subsystem 209

| | |
|---|-----|
| Defining a transform sequence | 210 |
| Configuring transforms | 211 |
| Creating transforms | 211 |
| Associating a transform with an actual destination | 215 |
| Examples of creating transform objects | 216 |
| Creating a transform object to copy to a file without printing | 216 |
| Creating a transform object to convert data and print only smaller files | 218 |
| Creating a transform object that updates the job's page count | 220 |
| Netware.exe | 222 |
| Using the Netware print program | 223 |

Chapter 26. Enabling capture for CMRs. 225

Chapter 27. Working with fonts. . . . 227

| | |
|--|-----|
| Fonts for printing transformed PostScript and PDF data | 227 |
| Font mapping files | 227 |
| Specifying font substitution through initialization files | 229 |
| Using OpenType Fonts | 229 |
| Using the Resource Installer to install OpenType fonts | 230 |
| Using font capture with OpenType fonts | 231 |

| | |
|---|-----|
| Using multiple fonts with limited printer memory | 231 |
| Using Unicode extended code pages. | 232 |
| Updating the global search path on an InfoPrint Manager Windows server | 232 |
| Using OpenType fonts with line data | 233 |
| Fonts for printing DBCS ASCII and EUC | 234 |
| Fonts required to print a double-byte transformed file | 234 |
| Installing DBCS fonts on Windows | 235 |
| Setting up font resources for DBCS ASCII and EUC printing | 235 |
| Printing Japanese DBCS fonts at the end of a job | 235 |
| Fonts for printing line data | 235 |
| Printing with the DBCS Simulation Fonts with the font metric adjustment triplet | 237 |

Chapter 28. Working with global resource identifiers 239

| | |
|--|-----|
| Uses of GRID files. | 239 |
| GRID files that come with InfoPrint Manager | 239 |
| InfoPrint search order for GRID files | 241 |
| Understanding the general syntax rules and allowable values for GRID files | 241 |
| Syntax rules that apply to all types of GRID files | 241 |
| Allowable values for the charset.grd file | 242 |
| Allowable values for the codepage.grd file | 242 |
| Allowable values for the fgid.grd file | 242 |
| Allowable values for the cpgid.grd file | 243 |
| Modifying GRID files. | 243 |
| Modifying the charset and codepage GRID files | 243 |
| Modifying the FGID and CPGID GRID files | 244 |
| Preventing InfoPrint from using GRID files | 246 |
| Using the 'no resident' version of the sample grid files | 246 |

Chapter 29. Generating and submitting color mapping table source and output files 247

| | |
|---|-----|
| Parts of a color mapping table. | 247 |
| Using source groups | 247 |
| Using target groups | 248 |
| Creating a color mapping table | 249 |
| Submitting jobs using a Color Mapping Table | 251 |
| Submitting jobs through the Windows command line. | 251 |

Chapter 30. Configuring the Halftone Management System 255

| | |
|---|-----|
| Using the correct halftones for the installed toner version | 255 |
| Limitations of actual screen frequencies and angles on InfoPrint 4000 and 4100 printers | 256 |
| Starting the Halftone Management System | 257 |
| Calibrating a densitometer | 257 |
| Calibrating a printer using the Halftone Management System | 259 |

| | |
|--|-----|
| Defining InfoPrint Manager servers to the Halftone Management System client. | 259 |
| Defining custom patch sets. | 259 |
| Calibrating a halftone | 260 |
| Measuring optical density with a densitometer | 263 |
| Specifying a halftone for printing on the InfoPrint AIX server | 263 |
| Printing from InfoPrint Submit Express. | 263 |
| Printing from the AIX command line | 263 |

Chapter 31. Submitting specialized print jobs 265

| | |
|---|-----|
| Submitting PSF printer input to a PCL or PPDS printer. | 265 |
| Setting up PCL tray mappings. | 265 |
| Printing PCL or PostScript to PSF destinations: | |
| specifying which paper bin to use | 267 |
| Determining bin mappings | 268 |
| Editing configuration files | 274 |
| Creating a transform with bin mappings | 274 |
| Sending print jobs to InfoPrint Manager for Windows from an AIX system. | 275 |
| Verify that the InfoPrint Manager LPD is running | 276 |
| Install and configure lprafp. | 277 |
| Printing from ERP applications | 277 |
| Submitting ERP print jobs from a Windows system | 277 |

Chapter 32. Configuring InfoPrint Manager for Windows to support the InfoPrint 5000 printer Models CS1 and CD1/2. 279

| | |
|---|-----|
| Mapping the Hot Folder for InfoPrint 5000 | 281 |
| Running scripts | 281 |
| Limitations of InfoPrint 5000 printer support | 282 |

Chapter 33. Configuring the InfoPrint 5000 Models AS1 and AD1/2 to print PDF and PostScript. 283

| | |
|---|-----|
| Printing PDF and PostScript files on the InfoPrint 5000 printer Models AS1 and AD1/2 with hot folders from InfoPrint Manager for Windows. | 283 |
| Running scripts before printing PDF and PostScript files | 283 |

Part 5. Operator and User Procedures 285

Chapter 34. Setting up finishing options for specific printers 287

| | |
|---|-----|
| Setting up finishing options for IPDS-only printers | 287 |
| Telling InfoPrint Manager what options the finisher supports | 287 |
| Setting up InfoPrint Manager and clients to use finishing options | 287 |
| Selecting the correct finishing options | 290 |

| | |
|---|-----|
| Staple positions for InfoPrint 2060ES, InfoPrint 2075ES, InfoPrint 2090ES, InfoPrint 2190, InfoPrint 2210, and InfoPrint 2235 | 293 |
| Staple positions for InfoPrint 2105ES | 294 |
| Setting up finishing options for PS/PCL printers | 294 |
| Telling InfoPrint Manager what options the finisher supports | 294 |
| Setting up InfoPrint Manager and clients to use finishing options | 295 |
| Selecting the correct finishing options | 298 |

Chapter 35. Setting up high speed printers for spacing. 301

| | |
|--|-----|
| Enabling SNMP on an InfoPrint 2000 for AFP printing | 301 |
| Enabling SNMP on an InfoPrint 3000 or an InfoPrint 4000 printer that uses the operator console | 301 |
| Enabling SNMP on a printer that uses the Enhanced Operator Console | 302 |

Chapter 36. General Operator and User Procedures 303

| | |
|--|-----|
| Turning duplexing on and off for the InfoPrint 45 and InfoPrint 70 | 303 |
| Deleting orphan files and resubmitting jobs to MVS Download | 304 |
| Deleting orphaned files from the system | 304 |
| Resubmitting jobs | 304 |
| Using a Windows gateway printer | 305 |
| Adding a Windows gateway printer to a workstation | 305 |
| Adding an Internet Printing Protocol (IPP) gateway printer to your desktop | 306 |
| Submitting jobs through InfoPrint Manager hot folders. | 306 |
| Mapping a network drive | 306 |
| Submitting jobs through a hot folder | 307 |
| Submitting print jobs through the InfoPrint Manager LPD | 308 |
| Install and configure lprafp for Windows from the Web | 309 |
| Preparing to submit print jobs. | 309 |
| Submitting print jobs. | 310 |
| Checking job status | 310 |
| Checking status using notifications | 310 |
| Checking status from the Printers window | 310 |
| Interrupting and restarting a job that is currently printing on an InfoPrint 4000/4100 | 310 |
| Interrupting a job that is currently printing | 311 |
| Restarting the interrupted job | 311 |
| Stopping, restarting, or pausing a job that is currently printing | 311 |
| Stopping the job | 312 |
| Restarting the job | 312 |

| | |
|--|-----|
| Pausing a job that's printing | 314 |
| Pausing a job that's printing | 315 |
| Pausing and restarting an actual destination | 315 |
| Pausing an actual destination | 315 |
| Resuming the actual destination | 316 |
| Moving backward or forward in a job that is currently printing | 316 |
| Spacing a printer | 316 |
| Stopping a printer to perform scheduled maintenance. | 317 |
| Fixing a printer problem and starting to print again | 318 |
| Try this first. | 318 |
| Fixing more complicated problems | 318 |
| Restarting the job that was printing when the problem occurred | 319 |

Part 6. Appendixes 323

Appendix A. IPDS print operator commands 325

Appendix B. IPDS error recovery . . . 329

| | |
|---|-----|
| IPDS error recovery: Data stream errors | 329 |
| Data stream error example 1 (job continues printing): | 330 |
| Data stream error example 2 (job is terminated, no pages print): | 330 |
| Data stream error example 3 (job is terminated; some pages print):. | 331 |
| IPDS error recovery: Insufficient memory in the printer. | 331 |
| Insufficient memory in the printer exmple: | 332 |
| IPDS error recovery: Intervention required conditions | 332 |
| Example: | 332 |
| IPDS error recovery: Unrecoverable problems | 333 |
| Unrecoverable problem example: | 333 |

Appendix C. Supported formatting objects 335

Appendix D. Accessibility 341

| | |
|---|-----|
| Using assistive technologies | 341 |
| Keyboard navigation of the user interface | 341 |

Notices 343

| | |
|----------------------|-----|
| Trademarks | 344 |
|----------------------|-----|

Glossary 347

Index 371

Figures

1. Sample spl_error.cfg file provided by InfoPrint Manager 38
2. Sample notifyd_error.cfg file provided by InfoPrint Manager 39
3. Disk usage algorithm 41
4. InfoPrint Manager user-exit program order at the printer 72
5. Brief and Full Styles of Start Sheets 100
6. Brief and Full Styles of Separator Sheets 101
7. Brief and Full Styles of End Sheets 101
8. Brief and Full Styles of Accounting-Log Sheets 102
9. Brief and Full Styles of Audit Sheets 103
10. InfoPrint Manager user-exit program order at the printer 103
11. Sample PostScript Daemon configuration file sections with staple and punch options 183
12. Sample PPML configuration file 198
13. Scenarios for using XML data that has been transformed to AFP or PDF 200
14. Process for transforming XML data to AFP or PDF. 201
15. Create Transform dialog: Define a transform that copies an AFP file to a folder without printing on Windows 217
16. Create Transform dialog: Define a transform that copies an AFP file to a directory without printing on AIX. 218
17. Create Transform dialog: Define a conditionally terminating transform 219
18. Create Transform dialog: Define a transform to pass job attributes 221
19. Sample File for a Character Set 240
20. Sample File for a Code Page 240
21. Sample File for a Global Identifier 240
22. Sample File for a Code Page Identifier 240
23. InfoPrint Administration Servers main window 252
24. Printer Properties notebook 253
25. First_run calibration 262

Tables

| | | | |
|--|-----|--|-----|
| 1. PC-based applications or a host system using IP Printway | 11 | 29. Screen Frequencies for InfoPrint 4000 IR1/IR2 Printers with Version 2, 3, or Standard Toner | 257 |
| 2. MVS Download, DPF, or a combination of PC-based applications and host systems | 12 | 30. Default bin mappings. | 266 |
| 3. PSF attachment types | 13 | 31. IBM PCL5e Bin numbers. | 268 |
| 4. InfoPrint notification delivery method characteristics | 21 | 32. Sample mapping table for an InfoPrint 20 | 270 |
| 5. Default notification profile settings. | 25 | 33. Paper bin information. | 271 |
| 6. File extensions for resources | 66 | 34. Suggested naming convention for InfoPrint 5000 hot folders. | 280 |
| 7. Sample user-exit programs | 72 | 35. Options to set for paper fed LEF on the InfoPrint 45 | 291 |
| 8. Default auxiliary sheet objects | 99 | 36. Options to set for paper fed LEF on the InfoPrint 60 | 291 |
| 9. Locations of InfoPrint Manager user exits | 104 | 37. Options to set for paper fed LEF on the InfoPrint 2000 | 292 |
| 10. Files that the ismu utility automatically backs up and restores | 124 | 38. Options to set for paper fed SEF on the InfoPrint 45 | 292 |
| 11. Mappings in the Sample DCF | 152 | 39. Options to set for paper fed SEF on the InfoPrint 60 | 292 |
| 12. Special mvs_parameters | 155 | 40. Staple positions for InfoPrint 2060ES, InfoPrint 2075ES, and InfoPrint 2090ES mapped to InfoPrint Manager values | 293 |
| 13. MVS keyword internal conversions | 160 | 41. Staple positions for InfoPrint 2105ES mapped to InfoPrint Manager values | 294 |
| 14. InfoPrint Manager transforms and configuration files | 180 | 42. Options to set for paper fed LEF for the InfoPrint 70 | 298 |
| 15. Default staple locations | 184 | 43. Options to set for paper fed SEF for the InfoPrint 70 | 298 |
| 16. Additional PostScript staple details | 184 | 44. Staple positions for InfoPrint 2085 and InfoPrint 2105 mapped to InfoPrint Manager values | 299 |
| 17. Default punch locations | 185 | 45. Staple positions for InfoPrint 2060ES, InfoPrint 2075ES, and InfoPrint 2090ES mapped to InfoPrint Manager values | 299 |
| 18. Additional PostScript punch details | 185 | 46. Staple positions for InfoPrint 2105ES mapped to InfoPrint Manager values | 300 |
| 19. Punch Setting for the /Pattern value | 186 | 47. 2-up duplex print job: front and back views | 313 |
| 20. Default TIFF, JPEG, and GIF Transform Configuration Files. | 189 | 48. 2-up duplex print job: front and back views | 320 |
| 21. ANSI carriage controls | 192 | 49. Supported XSL formatting objects. | 335 |
| 22. Machine carriage control characters | 192 | | |
| 23. Code pages and their associated PSFDBLANG values | 197 | | |
| 24. Default PPML transform configuration file | 198 | | |
| 25. Transform substitution variables | 213 | | |
| 26. IBM Expanded Core Fonts | 236 | | |
| 27. Screen Frequencies for InfoPrint 4000 IR3/IR4 and ID5/ID6 and InfoPrint 4100 HD3/HD4 and HS2 printers with Version 3 Toner | 256 | | |
| 28. Screen Frequencies for InfoPrint 4000 IR3/IR4 and ID5/ID6 and InfoPrint 4100 HD1/HD2, HD5/HD6, PD1/PD2, HS1, HS3, and PS1 printers with Version 2 (enhanced printing toner) or Standard Toner. | 257 | | |

Part 1. Introduction

Chapter 1. About this publication

This publication helps you with advanced configuration and daily administration/operations for InfoPrint® Manager for the Windows® Operating System, hereafter called InfoPrint Manager for Windows.

Who should read this publication

This publication is for the administrator who configures and manages an InfoPrint Manager environment. You should have already performed the basic installation of InfoPrint Manager by performing the steps described in the book *InfoPrint Manager for Windows: Getting Started*, G550–1072.

Most recent information

For the most recent information about InfoPrint Manager, go to the InfoPrint Solutions Company Web site at <http://www.infoprint.com>.

Chapter 2. The InfoPrint publication library

For the most current information, see the InfoPrint Solutions Company Web site at <http://www.infoprint.com>.

InfoPrint Manager common publication library

These publications are common to both InfoPrint Manager for AIX® and InfoPrint Manager for Windows:

- *InfoPrint Manager: SAP R/3 Planning and Configuration Guide*, S550-1051. For print administrators who need to create and configure both the SAP R/3 environment, we recommend that users possess a detailed knowledge of a SAP R/3 environment, as well as administering and maintaining either AIX or Windows operating systems. This publication describes how a business enterprise that uses SAP R/3 can use either InfoPrint Manager for AIX or InfoPrint Manager for Windows to manage its print environment.
- *InfoPrint Manager: Reference*, S550-1052. For print administrators, operators, and application programmers with the need to do command-line functions. This publication describes the commands, utilities, transforms, attributes, and attribute values associated with InfoPrint.
- *InfoPrint Manager: PSF and Server Messages*, G550-1053. This publication lists the PSF and Server messages and explanations from InfoPrint Manager.
- *InfoPrint Manager Print-on-Demand Feature: Submit Express User's Guide*, S550-1054. This publication is for the user who installs, configures, and uses Submit Express on a Windows or Macintosh workstation. Although you can use this publication for general guidance in using Submit Express, you should use the online Help to find more detailed instructions.
- *InfoPrint Job Ticketer: Job Ticketer User's Guide*, S550-1055. This publication is a guide for using the InfoPrint Job Ticketer Web application. This guide provides descriptions of tasks and procedures that an end-user needs to know to set up their workstation to use the application, and then to create, layout, store, retrieve print jobs, and submit the jobs to a print server for printing.
- *InfoPrint Job Ticketer: Administrator's Guide*, S550-1056. This publication is a guide for system administrators who are responsible for the InfoPrint Job Ticketer Web application. This guide provides information about the Job Ticketer system requirements, installation and configuration, system maintenance, security, and problem determination.

InfoPrint Manager for AIX publication library

InfoPrint Manager for AIX includes publications in PDF format on a CD-ROM supplied with the product.

The publications for InfoPrint Manager for AIX are:

- *InfoPrint Manager for AIX: Introduction and Planning Guide*, G550-1060. This publication gives an overview of InfoPrint Manager for AIX, introduces the concepts, and helps you prepare to use it. It addresses migration from previous versions of the product. And it explains the differences between the AIX and Windows versions of InfoPrint Manager.

- *InfoPrint Manager for AIX: Installation Instructions*, G550-1059. This publication describes how to install InfoPrint Manager for AIX 4.3. These instructions explain the procedures for local and remote installations.
- *InfoPrint Manager for AIX: Getting Started*, G550-1061. This publication helps you install and configure InfoPrint Manager for AIX. It focuses on the software configuration of server and client system.
- *InfoPrint Manager for AIX: Configuration and Tuning Guide*, S550-1062. This publication provides information about configuring and tuning the InfoPrint Manager for AIX, Version 4.3. This book is designed for the InfoPrint Manager administrator who needs to understand how to configure and tune an InfoPrint Manager system. It helps administrators to evaluate, develop, and maintain both a logical and hardware configuration for their environment.
- *Guidelines for Installing InfoPrint Manager for AIX 4.2 in an HACMP Configuration*, G550-1063. This publication helps you install and configure HACMP™ with InfoPrint Manager for AIX. It also describes how to use HACMP with InfoPrint Manager for AIX.
- *InfoPrint Manager for AIX: Using Generalized Fax*, S550-1064. This publication describes how to configure and use the Generalized Fax support that is included with InfoPrint Manager for AIX. This publication includes information about sending and receiving faxes from an InfoPrint Manager server.
- *InfoPrint Manager for AIX: Procedures*, G550-1066. This publication describes how to set up an InfoPrint environment, to submit print jobs, to schedule jobs, and to manage the print environment.

InfoPrint Manager for Windows publication library

InfoPrint Manager for Windows includes publications in PDF format on a CD-ROM supplied with the product.

The publications for InfoPrint Manager for Windows are:

- *InfoPrint Manager for Windows: Introduction and Planning Guide*, G550-1071. This publication gives an overview of InfoPrint Manager for Windows, introduces its concepts, and helps you prepare to use it. It describes features of this product. Finally, this publication explains the differences between the AIX and Windows versions of InfoPrint.
- *InfoPrint Manager for Windows: Getting Started*, G550-1072. This publication helps you install and configure InfoPrint Manager for Windows. It focuses primarily on server and client system software configuration.
- *InfoPrint Manager for Windows: Procedures*, G550-1073. This publication describes the primary tasks necessary for setting up an InfoPrint environment, submitting print jobs, scheduling jobs, and managing the print environment.

Related publications

The related publications are:

- *AFP Conversion and Indexing Facility User's Guide*, S550-0436.
- *Page Printer Formatting Aid: User's Guide*, S550-0801.
- *Using OpenType Fonts in an AFP System*, G544-5876.

Part 2. Administrative Procedures: Configuring InfoPrint Manager

Chapter 3. Using Multiple Network Adapter Cards

If you are concerned that your local area network (LAN) might not have enough bandwidth to handle the additional traffic that installing additional printers can create, you can create a secondary network that is essentially dedicated to driving printers. To set up this configuration, the system that your InfoPrint Manager server is installed on will have to have two network adapter cards installed in it, one for each network. Print data comes into the InfoPrint Manager server over the LAN and is transferred to the secondary network to be printed.

When you set up the secondary network, keep these points in mind:

- In the system that your InfoPrint Manager server is installed on, the primary network adapter card should be the one that connects to your existing network.
- In the system that your InfoPrint Manager server is installed on, the secondary network adapter card connects to a network that contains **only** printers. This network is isolated; no IP forwarding is recommended.
- The IP addresses for printers on the secondary network must not be resolvable on the primary network.

It is recommended that you use private IP addresses for your secondary network card and your printers, for example, addresses that follow either of these formats:

- Class A IP address: 10.xx.xxx.xxx
- Class B IP address: 192.168.xxx.xxx
- In the properties for the secondary network adapter card, you should not set a Default Gateway, DNS, or WINS. If these fields are filled in when you configure the card, clear the default values.
- On the printers that you connect to the secondary network, do not specify a Default Gateway. If you must specify a Default Gateway, enter the IP address of the secondary network adapter card.

Chapter 4. Selecting a type of actual destination

Once you have decided how many logical destinations, queues, and actual destinations you want to use and how to configure them, you need to determine which kind of actual destinations to create. In InfoPrint Manager for Windows, there are four basic types of actual destinations: PSF printers, Passthrough printers, BSD printers, and IPP printers. The names of the destination types refer to the destination support systems (DSSs) that process the print data and send it to the printer.

Consult these tables to help you determine what kind of destinations to create based on where your print jobs are coming from:

- PC-based applications or a host system using IP Printway
- Both PC-based applications and host systems (using MVS™ Download)

PC-based applications or a host system using IP Printway

Use this table to see which type of destination fits your needs.

Table 1. PC-based applications or a host system using IP Printway

| | | | | |
|--|--|-----------------------------|---------------------|---|
| If the data stream that your applications send to InfoPrint Manager is: | PostScript, PCL or any non-IPDS data stream | | | |
| and the data stream that you send to this printer is: | the same that the application sends to InfoPrint Manager | | | PCL, PPDS ¹ , IPDS™ |
| and your jobs are going to be sent to a printer: | through a Windows defined port | using a command such as lpr | that is IPP enabled | that is attached to your InfoPrint Manager system in any of the ways listed in the PSF Attachment Types table |
| Create this kind of actual destination: | Passthrough ² | BSD | IPP | PSF |
| Note: | | | | |
| <ol style="list-style-type: none"> 1. You can only print PPDS on a non-Windows system, for example, by sending the PPDS data stream to an AIX system. 2. If you are printing PCL data to an Windows-defined printer, and have therefore chosen to create a Passthrough destination, you might want to consider creating a "PSF attachment types" on page 13 destination instead. A Passthrough destination uses fewer processing resources, but a PSF destination provides much more functions, such as accounting and automatic data stream transforms. | | | | |

For example, an advertising firm is installing InfoPrint Manager for Windows to manage printing for its 1,200 employees. The company has 450 PCL and PostScript® printers that are between one and seven years old, and about 20 printers that are more than seven years old. They have recently purchased 5 PCL printers that are also enabled to use the Internet Printing Protocol (IPP). Most of the print jobs that users generate are from word processing, graphics, or desktop publishing programs. These applications create mostly PCL and PostScript print jobs, which don't need to be transformed to another data stream to be printed on the existing printers.

The print administrator decides to create three kinds of actual destinations.

- Passthrough printers will send jobs to the PostScript and PCL printers.
- IPP printers will send jobs to the new IPP-enabled printers.
- BSD printers will send jobs to the oldest of the printers (the ones that still receive jobs using the lpr command).

MVS Download, DPF, or a combination of PC-based applications and host systems

If you will be sending jobs to this destination from both PC-based applications and host systems (using DPF or MVS Download), use this table to see which type of destination fits your needs.

Table 2. MVS Download, DPF, or a combination of PC-based applications and host systems

| | | | | |
|---|---|-------------------------------|---|---|
| If the data stream that your host system and applications send to InfoPrint Manager is: | AFP™, ASCII, DBCS ASCII, line data, PCL, PostScript, PDF, IPDS (via DPF) ¹ | | PCL only | PS only |
| and the data stream that you send to this printer is: | IPDS | PCL or PPDS ² | PCL | PS |
| Create this type of actual destination: | PSF (TCP/IP) | PSF (other driver or command) | PSF (other driver or command) OR any of the destination types listed under PC-based applications | One of the destination types listed under PC-based applications |
| Note: | | | | |
| 1. DPF can only submit jobs to PSF printers. MVS Download can submit jobs to any of the printer types listed. | | | | |
| 2. You can only print PPDS on a non-Windows system, for example, by sending the PPDS data stream to an AIX system | | | | |

PSF attachment types

PSF destinations are further divided by attachment type. See this table for information about choosing an attachment type.

Table 3. PSF attachment types

| | | | |
|---|-------------------------|---|--|
| If you are sending this data stream to the printer: | IPDS | PCL or PPDS | PCL or PPDS |
| and you are going to attach the printer to the InfoPrint Manager system in this way: | over the TCP/IP network | over the TCP/IP network OR directly attaching it through a parallel or serial port | over the TCP/IP network using a command such as lpr to submit jobs to it |
| select this attachment type: | TCP/IP | Other driver | Command |

Chapter 5. Managed IPDS Dialog support

The Managed IPDS Dialog (MID) support enables additional sharing capabilities for specific printers. Current sharing of a print device is based on the setting of an inactivity timer. MID support overcomes these current limitations:

- Release for sharing requires physical intervention to disconnect the print device, and the PSF host must re-acquire the TCP/IP connection to process additional print requests. When the original connection is released, all downloaded resources are generally lost. Furthermore, there is a possibility that another host might acquire the TCP/IP connection and prevent the current host from processing additional print requests.
- Release of the print device is controlled by a specific time value. This causes the release of the printer even when there are no additional print requests pending.

With MID support, the printer can request that the PSF host release its control of the print device (but not drop the TCP/IP connection), thus allowing the print engine to print non-IPDS data streams when IPDS activity is minimal. MID support also enables the sharing of the print mechanism with other non-IPDS data streams.

This chapter includes the following sections:

- “Enabling MID support”
- “Considerations to activate MID support”

Enabling MID support

Set these parameters to enable MID support:

1. **mid-support-enabled**
 - a. Right-click the actual destination in the InfoPrint Manager GUI and click **Properties**.
 - b. Click **Tuning**.
 - c. Enter **Yes** in the **Enable MID Support** field to activate MID. The default value is **No**.
2. **mid-release-timer**
 - a. Right-click the actual destination in the InfoPrint Manager GUI and click **Properties**.
 - b. Click **Tuning**.
 - c. Specify a numeric value for **MID Release Timer** from 1 to 9999. The default value is **15**.

Note: The value for the **MID-release-timer** must be less than the value for the **destination-release-timer-setting**. The MID will never be enabled if the **destination-release-timer-setting** value is less than the **MID-release-timer** value.

Considerations to activate MID support

Consider these before you activate MID support for your print device:

- Your print device must be capable of supporting MID. Contact your InfoPrint representative if you are not sure of your print device capability.
- If you want incoming non-IPDS print requests to be intermingled with IPDS print requests, it is suggested that you maintain control over the print mechanism rather than activate MID.
- Jobs must be “stacked” before the print mechanism is released. This might lead to paper loss for the print device.
- Releasing the print mechanism might prevent the IPDS host from processing subsequent print requests until the control is returned to the host (the time depends on the capacity of each print device).
- The MID support does not allow for sharing of the print mechanism between two IPDS hosts for InfoPrint printers.

Chapter 6. Using the Internet Printing Protocol (IPP) with InfoPrint Manager

The Internet Printing Protocol (IPP) is an application protocol that uses the Hypertext Transfer Protocol (HTTP) to allow you to print your documents to any IPP-enabled printer whose web address (or Uniform Resource Identifier-URI) you know. You can use IPP to send print data over both LANs and the Internet so users who are directly connected to your LAN as well as those who work remotely have access to the same printers. InfoPrint Manager for Windows provides two ways to configure your system to print using IPP.

Printing to an IPP-enabled printer

If you have an IPP-enabled printer, you can create an IPP printer just as you would any other actual destination using the Create IPP Printer Wizard in the InfoPrint Administration GUI. To print to the new destination, you can submit jobs using a print command such as `pdpr`, or you can install InfoPrint Select on your workstation and create a Select printer that uses that destination or any other job submission method.

Printing through the IPP Gateway

The IPP gateway is a service in InfoPrint Manager that lets you print using IPP even if you don't have an IPP-enabled printer, as long as you (and your users) have IPP client software installed on your workstation.

Note: Windows 2000/2003 systems come with IPP client software built in. Users on other Windows platforms can download IPP client software. The Printer Working Group, the organization that is leading the development of IPP, provides a list of IPP client software that you can use to find an appropriate client at: <http://www.pwg.org/ipp/IPP-Products.html>

Once you have an IPP client installed, to set up the gateway:

1. Enable the IPP Gateway using the InfoPrint Manager Management Console. For more information about completing this task, see the Management Console online help .
 - a. The IPP Gateway runs as a Windows service called InfoPrint Manager IPP Gateway. On Windows 2000/2003 systems, the IPP Gateway is not set to start automatically by default. For information about changing the default settings, see the Management Console online help.

Note: Selecting this box does not start the IPP Gateway Service immediately. You must either restart the system that the InfoPrint Manager server is installed on or start the service from the Windows Control Panel.

- b. To start the IPP Gateway service from the Windows Control Panel:
 - 1) Navigate to the Control Panel and click **Administrative Tools**.
 - 2) In Administrative Tools, click **Services**.
 - 3) In Services, highlight **InfoPrint Manager IPP Gateway**, and then select **Action → Start**.

2. Verify that the gateway is working. Open your Internet browser and enter this web address, replacing *serverhostname* with the DNS hostname of the system that InfoPrint Manager is installed on:

`http://serverhostname:631/printers`

Note: If you don't have a DNS name server running on your network, replace *serverhostname* with the dotted-decimal IP address of the system that InfoPrint Manager is installed on instead.

If the gateway is working correctly, you will see a list of the printers that are available through the gateway. All of your InfoPrint destinations should be listed. Find the address (URI) of the destination you want your users to print to.

3. Refer your users to "Adding an Internet Printing Protocol (IPP) gateway printer to your desktop" on page 306. This step varies depending on which IPP client you are using; follow the instructions for adding a printer as provided by the IPP client. For the printer address, have your users enter the address that you found in step 2.

Chapter 7. Using InfoPrint Manager notifications

InfoPrint Manager can detect events (such as **job completed** or **destination needs attention**) as they occur, generate messages about those events, and deliver the messages to users who need the information. For example, users can receive messages about jobs they submit, operators can be notified about InfoPrint objects that require their attention, and administrators can be notified if someone makes a configuration change. With notifications, you don't have to query for status of the objects in your system—you just receive messages when specific events occur so that you can take care of them.

You can tailor who receives these messages and how they are delivered based on the **notification profile** that is set for a particular InfoPrint object.

Understanding notification profiles

Most InfoPrint objects (the server, actual destinations, logical destinations, queues, jobs, and default jobs) have **notification profiles** associated with them. A notification profile is composed of one or more *notification profile entries*. Each notification profile entry has three main components:

Event Identifiers

Which events cause messages to be sent. See “Event identifiers” on page 20 for more information.

Delivery method

How the messages are delivered. See “Delivery method and delivery address” on page 20 for more information.

Delivery address

Where the messages are sent. See “Delivery method and delivery address” on page 20 for more information.

In addition, a notification profile entry can include a comment (text that InfoPrint will add to the general message text) and a locale (to set the language that the message will be sent in). Comments are optional. If you don't specify a locale, InfoPrint delivers messages using the locale (language) that the user is running.

Some objects need only one entry in their notification profiles. For example, when a person submits a job, he is probably the only one who needs to receive information about it, and he will probably be content to have all of the messages about that job delivered the same way.

For other objects, there are very good reasons to have multiple entries. For example:

- If operators manage printers from more than one workstation, you can create an entry for each workstation. That way, all of the messages go to all of the machines.
- If operators can address some messages (like **destination-needs-attention**), but an administrator needs to address others (like **object-deleted**), you can create an entry for each operator and one for the administrator. Messages are delivered to the person who can handle them.

- If an administrator likes to use InfoPrint Manager Notifications while he's at work, and wants to keep a more permanent record of how often some events occur, he can set up two entries. One delivers messages to the InfoPrint Manager Notifications client and one writes certain messages into a file that he can check periodically.

Event identifiers

The **event identifiers** component lists the InfoPrint events that trigger notifications. You can find a full list of InfoPrint notification events and their descriptions in the *InfoPrint Manager: Reference*. In the descriptions, you will see what objects each event supports. If you add an event to an object that it does not support, no messages will ever be generated for that event. For example, you can add the **queue-backlogged** event to a notification profile entry for an actual destination, but **queue-backlogged** only supports the queue, job, and server objects. As a result, the actual destination notification profile will not generate any messages about that event.

That chapter also lists the InfoPrint Manager *event classes*, or groups of related notification events. When you add event identifiers to a notification profile, you can add individual events, event classes, or a combination of the two.

Each type of InfoPrint object has a default set of event identifiers. See "Default notification profiles" on page 24 for a list of defaults for each object.

Delivery method and delivery address

The **delivery method** component shows how you want notification messages to be delivered. The **delivery method** and **delivery address** components are strongly related; the delivery method you choose determines the type of value you use for the delivery address.

In addition, delivery method and delivery address are the *keyed components* in notification profile entries; they are the two values that InfoPrint Manager checks when you modify a notification profile. If the delivery method and delivery address that you specify match the delivery method and delivery address of an existing entry, InfoPrint Manager updates that entry. If both values don't match any of the existing entries, InfoPrint Manager adds a new entry to the profile.

There are various delivery methods defined for InfoPrint objects. All methods are valid for all objects **except** for **job-log**; **job-log** is only valid for jobs. Table 4 on page 21 lists the delivery methods, along with descriptions and how to set the delivery address for each type.¹

1. Two other delivery methods, **sapcb** and **sapconnect** exist, but they are only used internally with the InfoPrint Manager SAP Print Feature. You should never use either of those values in a notification profile entry.

Table 4. InfoPrint notification delivery method characteristics

| Delivery Method | Description | Delivery address |
|--|--|--|
| <p>message</p> <p>Message is the default delivery method for all objects.</p> | <p>Sends a message to the InfoPrint Manager notification server, where it waits for an InfoPrint Manager Notifications client to pick it up. Once a message is picked up, it is deleted from the notification server; there are no further records of that message.</p> | <p>The delivery address listed in the notification profile can be whatever you want it to be— a user id, office number, IP address, driver’s license number— as long as it is unique. To receive messages sent to that address, you must set the delivery address listed in the Settings dialog in the InfoPrint Manager Notification client to the same value. The InfoPrint Manager Notifications client will only pick up messages that specify an identical delivery address.</p> |
| <p>electronic-mail (synonyms: e-mail, email)</p> | <p>Sends an e-mail to the address listed in the delivery address.</p> <p>To use the e-mail delivery method, you must also set the smtp-server-host attribute on your InfoPrint Manager server to the IP address or DNS hostname of the system that your SMTP mail server runs on.</p> | <p>The e-mail address that you want notification messages to be sent to. For example, kjones@printerco.com.</p> |
| <p>exit</p> | <p>Doesn’t actually send a message. Instead, when the event specified in the event identifier occurs, InfoPrint Manager runs an exit program or script. See “Using the ‘exit’ delivery method” on page 24 for more information.</p> | <p>The full path to the notification exit program or script (with hard-coded arguments, if any).</p> |
| <p>wireless</p> | <p>Sends notifications to wireless devices, such as pagers, cellular phones, palm pilots, and laptop computers.</p> | <p>Because wireless notifications are delivered as e-mails, you must set both the smtp-server-host and the smtp-server-port server attributes on this InfoPrint server.</p> <p>If your InfoPrint server is behind a firewall, you might have to configure your SMTP server.</p> |
| <p>file</p> | <p>Writes the message in the file you specify in the delivery address. If the file doesn’t exist, InfoPrint Manager will create it. If the file does exist, InfoPrint Manager will overwrite it the first time it writes a message. After that, messages are added to the end of the file.</p> | <p>The directory path and name of the file that you want to write your notification messages in. This file must be on the same system as your InfoPrint Manager server.</p> |

Table 4. InfoPrint notification delivery method characteristics (continued)

| Delivery Method | Description | Delivery address |
|--|--|--|
| file-add-to | Adds the message to the end of the file you specify in the delivery address. If the file doesn't exist, InfoPrint Manager will create it. | The directory path and name of the file that you want to write your notification messages in. This file must be on the same system as your InfoPrint Manager server. |
| job-log Valid only for jobs. | Writes messages into the job-log attribute of the job. If the job is deleted, the job log is also deleted. To see the messages, enter the <code>pdls</code> command for the job-log attribute on the job you want to know about; or, on the InfoPrint Manager Administration Interface, go to Job → View Log . | No value needed. |
| none | Does not send any notifications; turns notification off. | No value needed. |

Working with Select notifications

By default when you submit a job using InfoPrint Select, a notification profile is sent with the job. If you have the Select message windows running when you submit a print job using InfoPrint Select, notifications are requested. If the Select message window is not running, notifications are not requested. When notifications are requested, they are delivered by e-mail. InfoPrint Select does not use the standard e-mail port for notifications to avoid conflict with other SMTP servers. If you have a conflict with the port that Select is using for notification, you can select another port by following: **Start → Programs → InfoPrint Select → InfoPrint Select Notification → InfoPrint Manager Message Port**, and entering another port.

The InfoPrint Select Notification message window usually starts automatically when Windows first loads, but to start the Notification message Window at another time, go to **Start → Programs → InfoPrint Select → InfoPrint Select Notification**.

To turn off the Notification message window, click **X** in the upper right corner of the window and then click **OK** on the warning message.

Note: If you receive a communication error when using the Select Message Window with Windows XP with Service Pack 2 or Windows 2003 with Service Pack 1, you might have to include **ipnotify.exe** on the **Exceptions** tab of the **Windows Firewall** dialog.

Setting up your own InfoPrint Select notification profile:

The Select notification profile overrides any notification settings that you configure in a default job. If you do not want to use the Select notification profile, use the appropriate procedure for your operating system:

- **Windows XP**

1. On the Windows system that InfoPrint Select is installed on, right-click **My Computer** and select **Properties**.

2. Select the **Advanced** tab, and click **Environment Variables**.
 3. Click one of the variables listed under **System Variables** to signal that you want to create a system variable. The variable and its value will appear in the fields at the bottom of the dialog.
 4. Clear the **Variable** and **Value** fields.
 5. In the **Variable** field, type: `pdnotify` and in the **Value** field type: `override_select`.
 6. Click **Set**.
 7. Verify that `pdnotify` appears in the list of **System Variables** and not in the **User Variables**. If it appears in the list of **User variables**, delete it and start again from step 3.
 8. Click **OK**.
 9. Restart your system to make the changes take effect.
- **Windows 2000**
 1. On the Windows system that InfoPrint Select is installed on, right-click **My Computer** and select **Properties**.
 2. In the System Properties window, click **Advanced**.
 3. On the Advanced tab, click **Environment Variables**.
 4. In the **System variables** box on the **Environment Variables** dialog, click **New**.
 5. In the **Variable Name** field, type `pdnotify` and in the **Variable Value** field, type `override_select`.
 6. Click **OK**.
 7. Verify that `pdnotify` appears in the list of **System variables** and not in the **User variables**. If it appears in the list of **User variables**, delete it and start again from step 4.
 8. Click **OK** in the **Environment Variables** dialog.
 9. Click **OK** in the System Properties window.
 10. Restart your system to make the changes take effect.
 - **Windows Vista or Windows Server 2008**
 1. On the Windows system that InfoPrint Select is installed on, right-click **My Computer** and select **Properties**.
 2. In the System Properties window, click **Advanced system settings**.
 3. On the Advanced tab, click **Environment Variables**.
 4. In the **System variables** box on the **Environment Variables** dialog, click **New**.
 5. In the **Variable Name** field, type `pdnotify` and in the **Variable Value** field, type `override_select`.
 6. Click **OK**.
 7. Verify that `pdnotify` appears in the list of **System variables** and not in the **User variables**. If it appears in the list of **User variables**, delete it and start again from step 4.
 8. Click **OK** in the **Environment Variables** dialog.
 9. Click **OK** in the System Properties window.
 10. Restart your system to make the changes take effect.

Using the 'exit' delivery method

The **exit** delivery method lets you set up automatic responses to system events beyond just sending a message. When you set the delivery method for a given event to **exit**, you use the delivery address to specify the explicit path to a script or program on your system. Whenever that event occurs, InfoPrint Manager runs the script or program you specify.

For example, if the InfoPrint Manager server runs low on disk space, the **disk-space-low** event generates a message for the system administrator. The administrator then has to do something to clean up the disk so InfoPrint Manager can continue to run effectively. However, using the **exit** delivery method can automate that process by launching a "disk clean up" script. The administrator can still receive the message, but will know that the script is already working on the problem.

If you are using the Print Optimizer DSS, InfoPrint Manager provides a sample script called **poexitcleanup** that you can use with the **exit** delivery method. The script demonstrates one way that you can automate cleaning up disk space in the Print Optimizer resource filesystem after the **disk-space-low** event occurs.

By default, when you use the exit delivery method, InfoPrint Manager only passes two values along to the script or program: the message number of the event that occurred and the text of the message. As a result, the command line that the exit delivery method executes is composed of the path that you specified in the delivery address, the last three digits of the message number, and the text of the message.

Therefore, if you create a notification profile entry for the **job-completed** event, setting the delivery method to **exit** and the delivery address to `c:\Infoprint\exits\myscript`, when a job finishes printing, InfoPrint Manager will generate and execute a command line similar to this one:

```
c:\Infoprint\exits\myscript 280 "5010-280 Finished processing job ofc,  
Job 20 (3520800004)."
```

The scripts or programs you write might require other information, such as the destination name or the printer model. To pass those values, you can include them in the delivery address of the notification profile entry; they will be added to the end of the command line when InfoPrint Manager creates it.

Note: The program run by a notification profile with the "exit" delivery method runs under InfoPrint Manager, which is running as a Windows service and does not have access to the desktop. Because of this, the notification method of "exit" does not allow a delivery address that requires a windowed program to be used, such as `notepad.exe`.

Default notification profiles

By default, the person who creates an object (server, destination, queue, job) receives the notification messages about that object. The default notification profile settings provide information such as object status, error conditions, or configuration changes. Some of these events require the person managing the object to intervene; for example, someone might need to clear a paper jam.

By default, the events listed in this table generate messages for the corresponding objects. These messages are delivered to the user who created the object: job

submitters receive messages about their print jobs; the administrator receives messages about destinations and servers that he or she created. The default delivery method is **message**, so the notifications are sent to the InfoPrint Manager Notification client on the system that the person used to create the object.

Table 5. Default notification profile settings

| Object | Events |
|---------------------|--|
| Actual destination | <ul style="list-style-type: none"> • destination-needs-administrator • destination-needs-attention • destination-needs-operator • destination-timed-out • object-cleaned • object-deleted |
| Default Job | No defaults set. See “Using notification profiles with default jobs” on page 26 for more information. |
| Job | <ul style="list-style-type: none"> • destination-needs-attention • destination-needs-operator • destinations-not-ready-for-job • document-aborted-by-destination • document-aborted-by-server • document-cancelled-at-destination • job-aborted-by-server • job-cancelled-by-operator • job-cannot-be-scheduled • job-completed • past-discard-time |
| Logical destination | <ul style="list-style-type: none"> • object-cleaned • object-deleted |
| Queue | <ul style="list-style-type: none"> • object-cleaned • object-deleted • queue-backlogged |
| Server | <ul style="list-style-type: none"> • internal-server-error • low-on-memory • memory-exhausted • object-cleaned • object-deleted • out-of-disk-space • out-of-dpf-haids • out-of-dpf-job-numbers • out-of-dpf-raids • sapcbd-down • sapconnectd-down • server-shutdown-complete |

Determining how much notification administrators, operators, and job submitters require takes some planning and, as you familiarize yourself with InfoPrint, you should discover when you require more or less notification. You can start by using the defaults and see how many and what kind of messages you receive. To send more or less notification, to modify which users receive notifications, or to send messages using a different delivery method, you can change the notification profiles.

Using notification profiles with default jobs

When someone submits a print job, InfoPrint Manager sends messages about that job based on a default notification profile. As a result, the delivery method is **message**, the delivery address is "the user ID of the person who submitted the job @ the address of the system the job was submitted from," and the event identifiers are those listed in Table 5 on page 25. (If you submit jobs using InfoPrint Select, the default notification profile is different. See "Working with Select notifications" on page 22 for additional information.)

To change the settings in the default notification profile, you can create a notification profile on a default job. There are several things to keep in mind when you set up a notification profile on a default job:

- You can only set one default job on each logical destination. As a result, all of the jobs will use the same notification profile.
- If you set a delivery address in the notification profile for the default job, all messages will go to that address. However, if you leave the delivery address blank, InfoPrint Manager will fill it in with the address that the job was submitted from (you can't specify this address; it is sent with the job). This option only works with the **message** and **e-mail** delivery methods and is the only time that the notification profiles are merged.
- If you submit a job with an explicit notification profile (for example, by including the **notification-profile** attribute when you submit a job using pdpr), that profile overrides the one set in the default job.

Note: If you submit jobs using InfoPrint Select, an explicit notification profile is sent with every job. To use a notification profile on a default job with InfoPrint Select, see "Working with Select notifications" on page 22 for information about overriding Select notifications.

Changing notification profiles

For jobs, default jobs, servers, queues, and actual destinations

You can use the properties notebooks in the InfoPrint Manager Administration GUI to change notification profiles for jobs, default jobs, servers, queues, and actual destinations. Open the properties notebook and click **Notification** for an actual destination, a job, or a default job. For a server, click **Other**. On the page that opens, you can see the notification profile entries that already exist, including:

- How messages about that object are delivered
- Who they are sent to
- What events generate messages
- Any comments that are included with the messages

Use the **Add**, **Modify**, and **Delete** buttons to make changes to the notification profile. See the online help for the InfoPrint Manager Administration GUI for additional information. You can also change notification for jobs in the InfoPrint Manager Operations GUI.

Note: If you change the delivery method, make sure you change the delivery address appropriately.

For logical destinations

The only way to change a notification profile for a logical destination is to use the **pdset** command. The procedures below provide examples of some common modifications you might want to make. You can use these procedures to change the notification profiles for other InfoPrint objects as well, but you might find it easier to use the properties notebooks in the InfoPrint Manager Administration GUI.

This procedure describes how to modify notification profiles by:

- “Adding or modifying events or users in a notification profile” on page 28
- “Removing users from a notification profile” on page 29
- “Changing the delivery method” on page 30

If you need to change other parts of a notification profile, see the *InfoPrint Manager: Reference* for information on the **pdset** command and the **notification-profile** attribute.

Important: When you modify a notification profile, InfoPrint Manager compares the new delivery method and delivery address to the delivery methods and delivery addresses in the existing entries and behaves accordingly:

- If you specify both of the values and both match the values in an existing entry, the modification replaces that entry.
- If you only specify one of the values, InfoPrint Manager fills in the other value with the default values. Then, it checks to see if any of the existing entries match that combination. If they match, InfoPrint Manager replaces that entry. If they don't match, InfoPrint Manager creates a new entry.
- If you specify both values but only one matches, InfoPrint Manager creates a new entry.
- If you specify both values and neither one matches, InfoPrint Manager creates a new entry.

When you delete a notification profile entry, the delivery method and delivery address in your command must match those in an existing entry exactly.

Viewing an existing notification profile

To see what values are set for a notification profile, follow these steps.

1. Open a DOS window on the computer that your InfoPrint Manager server is installed on. On Windows NT[®] systems, click the Windows **Start** button and select **Programs** → **Command Prompt**. On Windows 2000 systems, click the Windows **Start** button and select **Programs** → **Accessories** → **Command Prompt**.
2. Type this command. Fill in the values for the italicized items as defined below.
`pdls -c Type of InfoPrint object -r notification-profile Objectname`

Type of InfoPrint object

What type of object you want to perform this command on, not the specific object. For example, type **destination** not **printer1-ld**.

Objectname

The name of the destination or queue that this notification profile refers to.

3. Press **Enter**.

The notification profile will be displayed.

Note: If you have messages about a particular object sent to more than one person, the notification profile will display multiple entries, one for each person.

Adding or modifying events or users in a notification profile

To add or remove events in the notification profile for a particular delivery address, or to add another entry to the notification profile so that messages will be sent to another address as well, do this procedure:

1. Open a DOS window on the computer that your InfoPrint Manager server is installed on. On Windows NT systems, click the Windows **Start** button and select **Program** → **Command Prompt**. On Windows 2000 systems, click the Windows **Start** button and select **Program** → **Accessories** → **Command Prompt**.
2. Type the this command. Fill in the values for the italicized items as defined below.

```
pdset -c Type of InfoPrint object-x "notification-profile+={event-  
identifiers= event(s) delivery-method= method delivery-  
address="address"}" Objectname
```

Type of InfoPrint object

What type of object you want to perform this command on, not the specific object. Type **destination**, **queue**, **job**, or **server**.

event-identifiers

The events that cause InfoPrint Manager to send a message. You can have messages sent for any of the events that are listed in the events-supported attribute for the server. See the *InfoPrint Manager: Reference, InfoPrint object attributes* chapter, section *Attributes for Servers: events-supported*, for a list of these values. Not all events support all objects. See the *Notification events and event classes* chapter in the *InfoPrint Manager: Reference* for lists of what objects each event supports.

Note: You must type all of the events for this object that you want the user specified in the delivery address to receive, even if they already appear in the notification profile. Any events that you do not type will not be listed in the notification profile.

delivery-method

How you want messages to be sent. See Table 4 on page 21 for information about the various delivery methods.

delivery-address

Where you want to have messages sent. See Table 4 on page 21 for information about what kinds of delivery address value to use with each delivery method. Enclose the value in double quotes.

Note: You cannot specify more than one delivery address here. If you want another user to receive messages about the same (or different) events, finish this procedure, then enter the command again with that user's delivery address.

Objectname

The name of the destination or queue that this notification profile refers to.

3. Press **Enter**.

4. Repeat the process for other users and objects.

Example

The default notification profile for queues is set to send you messages when the **queue-backlogged**, **object-cleaned**, and **object-deleted** events occur. You need to change the notification profile for the print queue **printer1-q** so that you receive messages when the **queue-no-longer-backlogged** and **queue-state-changed** events occur as well. Your backup person does not currently receive any messages about queues, but needs to receive all of the same messages you do.

Issue this command to change your notification profile. Remember to list the event-identifiers for **all** of the events that you want this user to receive notifications about. This list of event-identifiers replaces the existing list entirely.

```
pdset -c queue -x "notification-profile+={event-identifiers=object-cleaned
object-deleted queue-backlogged queue-no-longer-backlogged
queue-state-changed delivery-address="administrator@mydesk.office.com"}"
printer1-q
```

Then, enter this command to have the **same** queue messages sent to your backup person.

```
pdset -c queue -x "notification-profile+={event-identifiers=object-cleaned
object-deleted queue-backlogged queue-no-longer-backlogged
queue-state-changed delivery-address="backup@hisdesk.office.com"}"
printer1-q
```

Use the “Viewing an existing notification profile” on page 27 procedure to make sure the changes took effect.

Removing users from a notification profile

To remove an entire entry from a notification profile, follow this procedure:

1. Open a DOS window on the computer that your InfoPrint Manager server is installed on. On Windows NT systems, click the Windows **Start** button and select **Program** → **Command Prompt**. On Windows 2000 systems, click the Windows **Start** button and select **Program** → **Accessories** → **Command Prompt**.
2. Use the “Viewing an existing notification profile” on page 27 procedure to find the entry you want to remove.
3. Type the following command. Type the correct **delivery-method** and the **delivery-address** exactly as it is displayed for the entry that you want to remove.

```
pdset -c Type of InfoPrint object -x "notification-profile-={delivery-
method=electronic-mail or message delivery-address="address"}"Objectname
```
4. Press **Enter**.
5. Use the “Viewing an existing notification profile” on page 27 procedure to verify that the entry has been removed.
6. Repeat the process for other entries.

Example

You and two other people currently receive messages about the logical destination **printer1-ld**. You don't want to receive them any longer. You view the notification profile, and see these three entries:

```
printer1-ld: notification-profile=  
  
{event-identifiers = object-cleaned object-deleted delivery-method = message  
delivery-address = "admin@desk1.office.com" locale = en_US}  
  
{event-identifiers = object-cleaned object-deleted delivery-method = message  
delivery-address = "helpdesk@desk2.office.com" locale = en_US}  
  
{event-identifiers = object-cleaned object-deleted delivery-method = message  
delivery-address = "backup@desk3.office.com" locale = en_US}
```

Enter this command to remove your entry from the notification profile.

```
pdset -c destination -x "notification-profile-={delivery-method=message  
delivery-address = "admin@desk1.office.com"}" printer1-ld
```

Note: If you display the notification profile to verify that the entry has been removed and find that it has not been removed, enter the command again, but this time instead of only specifying the **delivery-address**, type the entire notification profile exactly as it appears.

Changing the delivery method

You can choose to receive your notification messages in a variety of ways, as listed in Table 4 on page 21. To change the delivery method from the default to another value, follow this procedure:

1. Open a DOS window on the computer that your InfoPrint Manager server is installed on. On Windows 2000 systems, click the Windows **Start** button and select **Program** → **Accessories** → **Command Prompt**.
2. Use the "Viewing an existing notification profile" on page 27 procedure to find the entry you want to change.
3. Type the following command. Fill in the values for the italicized items exactly as they appear in the entry you want to change. Replace the **delivery-method** and **delivery-address** values as specified in Table 4 on page 21.

```
pdset -c Type of InfoPrint object -x "notification-profile+={event-  
identifiers=event(s) delivery-method=method delivery-address="address"  
locale=yourlocale}"Objectname
```

4. Press **Enter**.
5. Use the "Viewing an existing notification profile" on page 27 procedure to verify that the entry was added.
6. Follow the procedure for "Removing users from a notification profile" on page 29 to remove the old entry.

Example

You want to receive your messages about **printer1-q** in your E-mail instead of through InfoPrint Manager Notifications. You view the notification profile, and see this entry:

```
printer1-q: notification-profile={event-identifiers = object-cleaned
object-deleted queue-backlogged delivery-method = message delivery-address
= "admin@desk1.office.com" locale = en_US}
```

Enter this command to add another entry to the notification profile with a different delivery method and delivery address.

```
pdset -c queue -x "notification-profile+={event-identifiers=object-cleaned
object-deleted queue-backlogged delivery-method=electronic-mail
delivery-address="admin@mycompany.com" locale=en_US}" printer1-q
```

Then view the notification profile again and see two entries:

```
printer1-q: notification-profile= {event-identifiers = object-cleaned
object-deleted queue-backlogged delivery-method = message delivery-address
= "admin@desk1.office.com" locale = en_US} {event-identifiers =
object-cleaned object-deleted queue-backlogged delivery-method =
electronic-mail delivery-address = "admin@mycompany.com" locale = en_US}
```

Follow the procedure for removing a user to delete the entry that would send messages to InfoPrint Manager Notifications.

Getting help for notification messages

If you receive a notification message that you don't understand, InfoPrint Manager provides a way to get more information about the situation. In some cases, the explanation even suggests some things you can do to resolve the problem.

To see the full text of an error message, open the Management Console and select **Help** → **Message Help**. Type the message code in the fields at the top of the Message Help dialog, and click **OK**.

Other notification methods

Notify-operator attribute

The **notify-operator** attribute is a scaled-down version of a notification profile. It can only be set on InfoPrint Manager queues and actual destinations and can only use the **e-mail**, **message**, **exit** and **wireless** delivery methods. In addition, it only sends messages when one of these events occur.

1. A job is added to a queue.
2. An actual destination starts processing a job.
3. An actual destination finishes processing a job.

The syntax of the **notify-operator** attribute is:

```
delivery-method:delivery-address
```

Refer to Table 4 on page 21 for descriptions of the e-mail and message delivery methods and their corresponding delivery addresses. By default, the notify-operator attribute is set to **message:your user ID@your node** when you create an actual destination or a queue. To change the value for an actual destination, you can use the **Notification** tab of the properties notebook. To change the value for a queue, use the pdset command.

The messages that the notify-operator attribute delivers are not standard error messages like the ones you receive when you use a full notification profile. Instead, you write the messages that you want to send and specify them as attributes of jobs when you submit them.

Note: You must either specify those attributes in the command when you submit the job or set the text in the job and document defaults for the appropriate logical destination.

The job attributes that you use to specify these messages are the following.

- **job-message-to-operator**
The message that InfoPrint Manager sends when it adds a job to the queue.
- **job-start-message**
The message that InfoPrint Manager sends when the job starts processing.
- **job-end-message**
The message that InfoPrint Manager sends when the job finishes processing.

You can type the text for all three of these messages in the appropriate field on the **Job Notification** tab of the properties notebook for a job or a default job.

In addition, you can use the **job-start-message** attribute in conjunction with the **job-start-wait** attribute. If you set the **job-start-wait** attribute on a job (or in a default job) to **true**, the actual destination receives the job and sends the job-start message. Then, it pauses the actual destination (whether or not a job is currently being printed) until the operator intervenes. This function is useful when different jobs need to be printed on different types of paper. Operators don't need to manually pause the actual destination to change paper between jobs; InfoPrint Manager does it automatically. Once the printer is ready, the operator must resume the actual destination and the job prints. This function should be set for the first in a series of jobs, once you are certain that there are no jobs printing on the printer. Because it compels InfoPrint Manager to pause the printer for every job with `job-start-wait=true`, you should not specify this value on the default job.

To use the **job-start-wait** attribute, you must set it to **yes** on the job or default job. You can specify the attribute in the command when you submit a print job or set it on the **Job Notification** tab of the properties notebook for default jobs.

Chapter 8. Managing security

InfoPrint Manager security is a feature that you administer through the InfoPrint Manager Management Console. It lets you protect your printing system by associating an Access Control List (ACL) with an InfoPrint object or operation. An *ACL* is the list of users and groups who have permission to do something to or with an object, and what type of permission that is.

Important: InfoPrint Manager Security references the login ID of the current user to determine who is attempting to perform an action. Otherwise, the InfoPrint Manager security system is entirely separate from any Windows security you have set. For example, you cannot use groups that you create with the Windows User Manager in InfoPrint Manager Security- you must create security groups using the InfoPrint Manager Management Console.

If you do not want to use InfoPrint Manager Security, you can turn it off using the server properties notebook in the InfoPrint Manager Administration GUI by setting the **Security level** for your server to **none**.

Types of permission

In InfoPrint Manager, users can have three levels of permission: **read**, **write**, and **delete**. The levels provide these types of access.

- **Read-** For operations, the user can perform the operation. For servers and queues, the user can view the attributes. For destinations, the user can view attributes and submit jobs to that destination.
- **Write-** For all objects, the user can modify attributes.
- **Delete-** For all objects, the user can delete the object.

Note: The levels of permission are not cumulative. If you give a user **delete** permission only, he will **not** automatically have **read** and **write** permissions. Be sure to mark all of the levels of permission that the user needs.

If you place user A on the ACL for the logical destination "print2ld" and give her **read** permission, she can send her print jobs to it and can open the "print2ld" object to see its properties. However, she cannot make changes to those properties. If she tried to change any of them or tried to delete the destination, she would receive an error message. If you decide that user A needs to be able to do more and give her **write** permission as well, she will be able to change the properties of "print2ld," but still will not be able to delete it.

Important: If you protect a destination (logical or actual) so that only certain users can modify or delete its properties, you might inadvertently prevent other users from submitting print jobs to it. To be sure that all of your users can still print to the destination, add the wildcard character (*) to the ACL as a user with read permission.

You can also attach ACLs to the operations that you can perform on InfoPrint objects. Allowing you to protect both operations and objects means that InfoPrint Manager Security provides different levels of security: you can protect all objects by using ACLs at the operation level or you can protect individual objects with

ACLs applied only to them. Or you can do both: protect all objects by using operation-level ACLs for some operations, and limit access to subsets of objects by using object-level ACLs.

For operations, there is only one level of permission: **read**. If a user has **read** permission, he can perform that action; if he does not, he cannot perform the action. For example, user B is a printer operator and must be able to move jobs to different positions in the print queue because some jobs need to be printed before others. You can give user B **read** permission for the operation **Reorder Job** to allow him to do his job. On the other hand, user C submits print jobs from his office workstation and doesn't like to wait for the jobs ahead of his in the queue to print. To prevent him from moving jobs, don't put him on the ACL for the **Reorder Job** operation. When he tries to move his job to the top of the queue, the action will be denied.

When you install InfoPrint Manager, many operations are already protected so that only members of the **admin** and **oper** groups can perform them. You can see the ACLs for operations in the Management Console by selecting the **Security-ACL-Operations** item in the left pane. If you want users to be able to perform those operations, you must either add those users to the individual ACLs or to a group that has permission (either the existing **admin** and **oper** groups or a new group that you create).

Note: If an object is protected, a user can only perform an operation on that object if he has both **read** permission for the operation and the appropriate level of permission for the object (for example, a job or a printer).

- If the object is not protected, any user with **read** permission on an operation can perform that operation.
- If the object is protected, the permission needed depends on the operation. For example: **List** requires **read** permission on the object, **Set** requires **write** permission, and **Delete** requires **delete** permission.

By default, InfoPrint objects (destinations, queues, servers) are not protected, members of the **admin** group have read permission on all operations, members of the **oper** group have read permission on most operations, and **all** users have read permission on five operations. Those five operations are:

- **List/Query** (all objects)
- **Print**
- **Modify job**
- **Query job**
- **Remove job** (delete job)

However, users who are not members of the **admin** and **oper** groups can only modify and remove jobs that they submitted. In addition, if the ACL for the **Reorder job** action is changed so that everyone can use it, users who are not members of the **admin** and **oper** groups will only be able to reorder jobs that they submitted. By default, members of the **admin** and **oper** groups can do all six of those operations on all jobs.

Note: If you decide to protect your queues, all users will still be able to perform the tasks listed above on their own jobs. Users who are on the ACL for a queue will be able to perform those tasks on all jobs in that queue.

Security groups

No matter what size organization you work in, manually adding every user to every ACL can be a time-consuming process. To reduce some of the work, you can create *security groups*, groups of users who need to have the same levels of permission for the same objects. You use the name of the security group like a user ID; instead of adding each user ID to an ACL, you add the group name. For example, if you want all of your help desk operators to be able to perform the same operations, create a group and name it **helpdesk**. Then, add **helpdesk** to the appropriate ACLs.

Important: User IDs and group names are case-sensitive.

When you install InfoPrint Manager, three security groups are created by default:

- **acl_admin**- Users who have authority to manage security by changing access control lists and groups. The default members are **Administrator@*** and the user who was logged on when InfoPrint Manager was installed (for example, **myuserid@***).
- **admin**- Users who have administrator authority. The default members are **Administrator@*** and the user who was logged on when InfoPrint Manager was installed (for example, **myuserid@***).
- **oper**- Users who have operator authority. The default member is **Administrator@***.

Note:

1. If you have installed InfoPrint Job Ticketer as part of the Print-on-Demand feature, the **Job Ticketer** group is created. Unlike the other groups, there are no default users created during installation. See *InfoPrint Job Ticketer: Administrator's Guide* for more information.
2. You can modify these groups as needed. In the example above, you could have simply added the help desk operators to the default **oper** group and modified any permissions that weren't set to the level that you wanted them.
3. The default group members contain the wildcard character (*) for greater flexibility. See below for more information about wildcarding. If you don't want the Administrator user on other systems to be able to administer InfoPrint Manager, replace the * with the explicit address of the system that the InfoPrint Manager server is installed on, for example **Administrator@serversystem.company.com**.

You can add users to multiple groups, but you cannot make one group a member of another group. For example, if you hire five new print operators, you might create a group for them called **trainees**, since you only want them to have limited permissions until they are finished with their training. When they finish their training, you cannot add **trainees** as a member of the **operators** group. You will have to add their user IDs to the operators group one at a time. In addition, you will have to either delete the **trainees** group or delete the members from it—otherwise those users will have conflicting levels of permission.

When users are members of more than one group and each group has a different level of permission for a particular object, the most restrictive permission applies. In the example above, if you forgot to remove the new employees from the **trainees** group at the end of their training, they wouldn't be able to perform the tasks their job required- they would still be restricted.

Identifying users and groups: wildcarding

When you add users to ACLs or Security groups, you identify them by their user ID and the computer that they work on in this format: *username@computername*. The permissions you assign will only apply when that person accesses InfoPrint Manager from that workstation.

Note: The *computername* that you specify must be the fully qualified name of the workstation, for example: *joescomputer.infoprint.com*

If, however, you or any of your users want to be able to work with InfoPrint Manager objects from various workstations, you might not want to add multiple user ID/computer name combinations for the same person— you can use wildcarding instead. When you use wildcarding, you replace the computer name or user ID with the wildcard character (*) when you add a member to an ACL or Security Group. The wildcard character stands for “any computer” or “any user ID.” So, if you create an ACL member called **Administrator***, no matter what computer you log on to as **Administrator**, you have the same permissions. If you use the wildcard character before the computer name, for example ***@computer1**, any user who logs on to computer1 can perform the actions that the ACL member has permission for.

Working with ACLs and groups

Use the InfoPrint Manager Management Console to manage the security of your print system. Open the **Security** folder in the left pane of the Management Console to display the Access Control Lists folder and Groups object. Open the Access Control Lists folder to see the types of ACLs that exist. Click the type of ACL (**Operations**, **Destinations**, **Servers**, or **Queues**) to display the ACLs that exist. Click **Groups** to see the groups that currently exist and their members.

For more detailed information about using the Management Console to work with groups and ACLs, see the online help (in the Management Console, click **Help -> Contents**, and look on the **Contents** tab under **Managing Security**).

Chapter 9. Customizing error logs in the InfoPrint Manager Windows server

InfoPrint Manager provides three configuration files for various InfoPrint Manager servers and processes:

1. **spl_error.cfg** for the InfoPrint Manager server error log.
2. **notifyd_error.cfg** for the Notification server error log.
3. **sap_error.cfg** for all the SAP Callback processes.

To customize error logs for one of these servers or processes to control their size, whether they wrap, the severity level of messages written to the logs, and the number of back-up logs that InfoPrint Manager saves, you must perform one of the procedures in the next section.

Customizing an InfoPrint Manager server error log

By default, the InfoPrint Manager server error log starts when the InfoPrint Manager server starts. Use this procedure to customize the InfoPrint Manager server error log.

1. Find the **spl_error.cfg** file in the **bin** directory that is under the directory where InfoPrint Manager is installed (the default is C:\Program Files\IBM\Infoprint Manager).
2. Copy the **spl_error.cfg** file into the *workspace_path* directory.
The *workspace_path* is specified on the **Workspace path** field. From the **InfoPrint Manager Management Console**, click **Edit** → **Service Configuration** path to verify the setting of the **Workspace path** field. For these examples, *workspace_path* signifies the fully qualified path where the error log is in, such as C:\Program Files\IBM\Infoprint Manager\var\pd.

Note: If you already customize your server error logs, remember to change the name or move the current **spl_error.cfg** file in *workspace_path* so that your customization values can be copied over into the newer version of the file.

3. Open a copy of the **spl_error.cfg** file in the *workspace_path* directory and edit it to specify the settings for the log attributes that you want (as shown in Figure 1 on page 38).

For example, you can modify the **log-backup-number** attribute, which lets you specify the number of backup logs that InfoPrint saves, including the initial **error.log.BAK** file. Before this attribute was added to the product, an unlimited number of logs were saved.

```

#
# ErrorLog Configuration File
#
# Log size (units = KBytes)
log-size = 1024
# Wrap On?
log-wrap = true
# Severity?
log-severity = debug
# Number of backup log files
log-backup-number = 10

```

Figure 1. Sample `spl_error.cfg` file provided by InfoPrint Manager

When you start the InfoPrint Manager server after a shutdown, it backs up the first error log by creating an **error.log.BAK** file. With each successive restart, it creates an additional **.BAK** file, adding a timestamp as a fourth qualifier. By default, the **log-backup-number** attribute specifies a value of **10**, meaning that you can have nine back up files with timestamps and the initial **.BAK** file. You can reduce this number as low as 1 or increase it as high as 999.

For a complete list of the error log attributes that you can customize, see the *InfoPrint Manager: Reference "Attributes for logs"* topic in "Chapter 3. InfoPrint object attributes."

4. Once you have finished defining your options, save and close the file.

Note: If you do not need the customization change to take effect immediately, you can skip the final two steps and just wait until the next time the InfoPrint Manager server is restarted.

5. To shut down the server from the Management Console, specify **File** → **Stop server**.
6. To restart the server from the Management Console, specify **File** → **Start server**.

Customizing a Notification server error log

By default, the Notification server error log starts when the Notification server starts. Use this procedure to customize the InfoPrint Notification server error log.

1. Find the **notifyd_error.cfg** file in the **bin** directory that is under the directory where the file is installed.
2. Copy it to the *workspace_path* directory.

The *workspace_path* is specified on the **Workspace path** field. From the **InfoPrint Manager Management Console**, click **Edit** → **Service Configuration** path to verify the setting of the **Workspace path** field. For these examples, *workspace_path* signifies the fully qualified path where the error log is in, such as `C:\Program Files\IBM\Infoprint Manager\var\pd`.

Note: If you already customize your Notification server error log, remember to change the name or move the current **notifyd_error.cfg** file in *workspace_path* so that your customization values can be copied over into the newer version of the file.

3. From the *workspace_path* directory, edit the **notifyd_error.cfg** file to specify the settings for the log attributes that you want (as shown in Figure 2 on page 39).

For example, you can modify the **log-backup-number** attribute, which lets you specify the number of backup logs that InfoPrint saves, including the initial **error.log.BAK** file. Before the **log-backup-number** attribute was added,

InfoPrint Manager for Windows only saved one backup error log.

```
#  
# Error Log Configuration File  
#  
log-size = 1024  
log-wrap = true  
log-severity = debug  
log-backup-number = 10
```

Figure 2. Sample notifyd_error.cfg file provided by InfoPrint Manager

When you start the InfoPrint Manager server after a shutdown, it backs up the first error log by creating an **error.log.BAK** file. With each successive restart, it creates an additional **.BAK** file, adding a timestamp as a fourth qualifier. By default, the **log-backup-number** attribute specifies a value of **10**, meaning that you can have nine back up files with timestamps and the initial **.BAK** file. You can reduce this number as low as 1 or increase it as high as 999.

For a complete list of the error log attributes that you can customize, see the *InfoPrint Manager: Reference "Attributes for logs"* topic in "Chapter 3. InfoPrint object attributes."

4. Once you have finished defining your options, save and close the file.

Note: If you do not need the customization change to take effect immediately, you can skip the final two steps and just wait until the next time the InfoPrint Manager server is restarted.

5. To stop the Notification server on an InfoPrint Windows server:
 - a. Click **Start** → **Settings** → **Control Panel** → **Services**.
 - b. Highlight **InfoPrint Manager Notification** and click **Stop**.
6. To restart the Notification server on an InfoPrint Windows server:
 - a. Click **Start** → **Settings** → **Control Panel** → **Services**.
 - b. Highlight **InfoPrint Manager Notification** and click **Start**.

Chapter 10. Monitoring disk use

InfoPrint Manager includes support to help you monitor disk usage. The InfoPrint Manager server polls critical disks at regularly scheduled intervals, and it increases the polling as the usage increases. Initially, the disk is polled for usage every 16 minutes.

Here is the polling schedule:

80% Every 8 minutes
90% Every 4 minutes
95% Every 2 minutes
97.5% Every minute

If the usage for a disk goes above the InfoPrint Manager pre-defined threshold of 80%, InfoPrint Manager logs a message and generates a **disk-space-low** event. As usage increases above the 80% threshold, more messages and **disk-space-low** events are logged and generated.

Each time usages goes above the 80, 90, 95, and 97.5 percent usage levels, the **disk-space-low** event is generated and logged. However, InfoPrint Manager only issues one event for each usage level. Figure 3 illustrates the algorithm used to monitor disk usage.

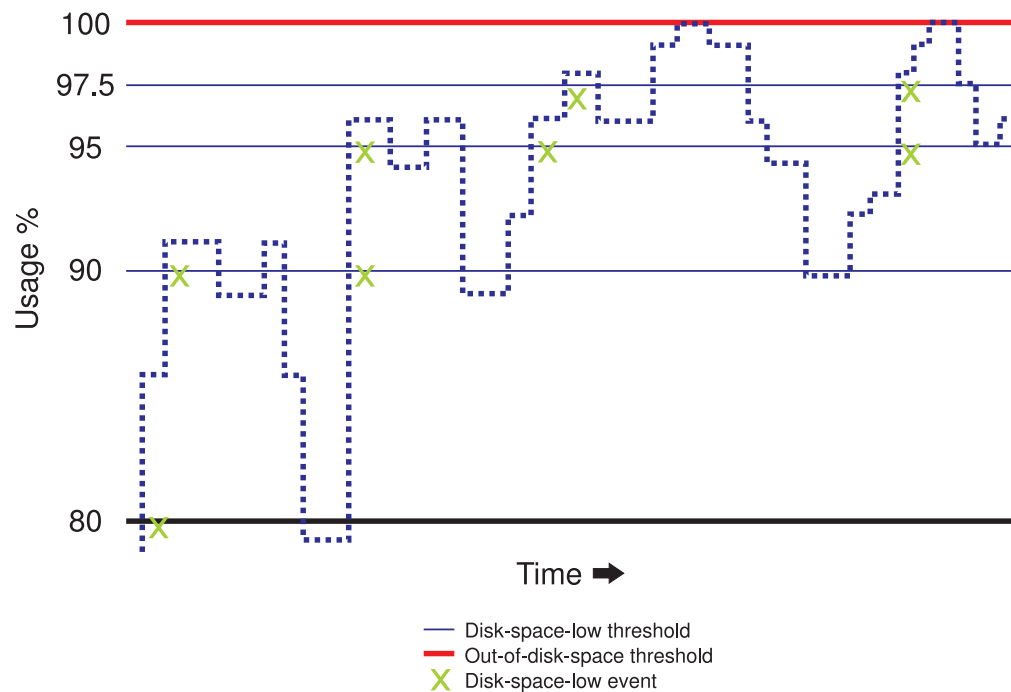


Figure 3. Disk usage algorithm

Note: The threshold is reset if the disk usage drops below the previous threshold; for example, when the disk usage drops to 70% after an 80% **disk-space-low** event, it is reset.

Adjusting your server notification profile for disk usage

The InfoPrint Manager server notification profile uses the **out-of-disk-space** event as the default, so that when your disk usage reaches 100%, this event is generated. You can modify the server notification profile to add the **disk-space-low** event. However, the messages from the disk usage monitoring are always logged; regardless of the events in the server notification profile. It is recommended that you include both the **disk-space-low** and **out-of-disk-space** events in your notification profiles.

Disks monitored by InfoPrint Manager

InfoPrint Manager for Windows monitors these paths (as shown in the **Management Console** → **Service Configuration**) that point to subdirectories where InfoPrint Manager is installed:

- **Install path**
- **Base namespace path**
- **Workspace path**
- **AFP support workspace path**

Chapter 11. Administering your InfoPrint Manager server using a Windows Terminal Server client

While you can do most administrative tasks using the InfoPrint Manager Administration GUI, there are a few that you must do using the Management Console. However, since the Management Console must reside on the system that your InfoPrint Manager server is installed on, performing those tasks can be inconvenient. The only way to perform administrative tasks on the Management Console on a different system is to use a Windows Terminal Server. If you use Windows 2000, Terminal Server capabilities are included in Windows 2000 Server. Therefore, you must install your InfoPrint Manager server on a Windows 2000 Server system, not a Windows 2000 Professional system.

Once you have InfoPrint Manager installed on the correct version of Windows, you need to install the Terminal Server Client on any other systems that you want to be able to access the Management Console from. You can install the client on one of these systems:

- Windows 2000 Server SP4
- Windows Server 2003 Standard Edition
- Windows Server 2003 R2 Standard Edition SP2
- Windows Server 2003 Enterprise Edition SP2
- Windows Server 2003 R2 Enterprise Edition SP2
- Windows Server 2008 Standard Edition

Use the “Installing the Windows Terminal Server client” procedure to create installation disks and install the client.

Installing the Windows Terminal Server client

To complete this procedure, you need two blank floppy disks.

For Windows 2000/2003 Server:

1. Log on to the system that your InfoPrint Manager server is installed on.
2. On Windows Server, click **Start** → **Programs** → **Administrative Tools** → **Terminal Services Client Creator**.
3. Select **Terminal Services for 32-bit x86 Windows** and check the **Format disk(s)** check box. Click **OK**.
4. Follow the instructions in the pop-up dialogs to create your Terminal Services Client installation disks.

Note: Save these disks. You will need them if you ever need to uninstall the client.

5. Close the dialog once the disks are created.
6. Log on to the machine that you want to install the Terminal Services Client on.
7. Insert the first Terminal Services Client installation disk in the drive.
8. Navigate to that disk drive and double click **Setup.exe** to start the **Terminal Server/Services Client Setup** wizard.

9. Follow the instructions in the wizard to install the client.
When you finish the wizard, Terminal Server/Services Client will be added to your **Start** menu.
10. Start the client by selecting **Start → Programs → Terminal Services Client → Terminal Services Client**.
11. Find the name of the server that your InfoPrint Manager server is installed on and connect to it.
Once you are connected, you can open the Management Console and use it just as you would on the server system itself.

Chapter 12. Changing the server hostname and IP address

Use this procedure to change the hostname of the system that your InfoPrint Manager server runs on.

Note:

1. If you have changed the hostname/IP address on the system and already restarted the system, the InfoPrint Manager service will not be able to start and your InfoPrint GUIs will not function properly. Complete the “Changing the server hostname and IP address” task to correct the problem.
2. If the system that your InfoPrint Manager server runs on is part of a domain, remove it from the domain before you do this procedure. Complete the “Changing the server hostname and IP address” task before you add the system to the domain again.
3. **For multi-server environments:**
 - If you are changing the hostname/IP address on the namespace system, you must stop all of the non-namespace servers and un-map all of the network drives that you have mapped to the namespace system before you start the procedure below. After you complete the procedure below, re-map the network drives. Then, use the Management Console (**Edit → Service Configuration**) on each of the non-namespace servers to change the **Base namespace path** and **Remote namespace folder** to the new hostname and restart the non-namespace servers.
 - If you are changing the hostname of a InfoPrint Manager non-namespace server (running on Windows 2000 or 2003) that shares a namespace with InfoPrint Manager for AIX (with the namespace on an AIX system), follow the “Changing the hostname of a non-namespace server” on page 46 procedure.

Changing the server hostname and IP address

1. If your InfoPrint Manager server is running, stop it by selecting **File → Stop Server** in the Management Console.

Notes: If you changed the hostname on the system and already restarted the system, your InfoPrint Manager server will already be stopped.

2. If you use InfoPrint Manager Security and have changed the member names of the **acl_admin** group so they include the hostname, follow these steps:
 - In the left pane of the Management Console, open the **Security** folder and click **Groups**.
 - In the right pane, check to see if any of the member names in the **acl_admin** group include the hostname.
 - Edit any user IDs in the **acl_admin** group that contain the old hostname by replacing the hostname with the wildcard character (*), so you will still be able to administer InfoPrint Manager Security after the hostname is changed.
 - Make note of the members that you change so you can replace the wildcard with the new hostname once it is set.
3. Change the hostname/IP address using Windows interfaces. When the system asks, choose **not** to restart the system.

Note: If you have already changed the hostname/IP address of your system, you do not have to change them again. Continue with step 4.

4. In the Management Console, click **Edit** → **Changed Hostname**.
5. In the **Changed Hostname** dialog, enter the new hostname. Names are case-sensitive. Make sure the new hostname that you type exactly matches the one on your Windows system and click **OK**.
6. When the system asks, restart the system so the changes take effect.
7. Update all of the client systems that communicated with the server using the old hostname/IP address to use the new one, including:
 - InfoPrint Select clients
 - InfoPrint Manager Administration GUI
 - InfoPrint Manager Operations GUI
 - Windows gateway printers
 - IPP Gateway clients
 - InfoPrint Manager Notifications clients
8. Update any InfoPrint Manager Security ACLs or groups that reference IDs using the old hostname. In addition, if you changed any members of the **acl_admin** group in step 2, change the wildcard character to the new hostname.

Changing the hostname of a non-namespace server

Follow this procedure only if you are running both InfoPrint Manager for AIX and InfoPrint Manager for Windows as interoperating print servers and need to change the hostname of the system that InfoPrint Manager for Windows is running on.

1. Complete “Changing the server hostname and IP address” on page 45 on the non-namespace server. At the end of the procedure, the InfoPrint Manager for Windows server should be stopped and can no longer access the namespace on the AIX machine.
2. On the system that InfoPrint Manager for Windows runs on, disconnect the network drive that was mapped to the namespace on the AIX machine.
3. Log on to AIX server machine as **root**.
4. Follow this path: **Smitty** → **InfoPrint Printing System** → **InfoPrint Utilities** → **Configure Secondary Servers (NFS)** → **Link from Primary Server to Secondary Server**
5. In the dialog that appears:
 - a. Type the new hostname in the **Secondary Server Host Name** field.
 - b. Type the new server IP address in the **Secondary Server IP Address** field.
 - c. For **Is /ipdata used for job ticketing?** answer:
 - **Yes** if you use /ipdata with InfoPrint Submit.
 - **No** if you do not.
 - d. For **Retain secondary servers previously defined?** answer **Yes**.
6. On the Windows server machine, remap the network drive to the `\\aixserver\var\pddir\default_cell` filesystem using the same drive letter that you used for the network drive that you disconnected in step 2. Map the drive using the same user id and password that you used during the initial multiserver environment setup.
7. Log on to the AIX server machine as **root**.
8. Stop the InfoPrint Manager for AIX server.

9. Clear the namespace by issuing the `clrfstns /var/pddir/default_cell` command.
10. Create the shared namespace by issuing the `crtfstns /var/pddir/default_cell` command.
11. Start the InfoPrint Manager for AIX server.
12. Start the InfoPrint Manager for Windows non-namespace server.

Changing only the server IP address

If you are only changing the IP address and you have updated your system name resolution so that the old name resolves to the new IP address, InfoPrint Manager will be reset to use the new IP address with the old hostname when you restart the system. If any of your InfoPrint clients refer to InfoPrint Manager using the IP address, you must update them so they use the new IP address.

Chapter 13. Setting up your InfoPrint Manager server to use resources on a different Windows system

Sometimes, users choose to store printing resources (such as pagedefs, formdefs, and fonts) on systems other than the one that their InfoPrint Manager server runs on. If you choose that setup, you must first make sure that InfoPrint Manager has access to the resources, then tell InfoPrint Manager where the resources are located. Use these procedures to complete these tasks.

1. "Giving InfoPrint Manager access to remote resources"
2. "Telling InfoPrint Manager where your remote resources are located" on page 51

Giving InfoPrint Manager access to remote resources

Follow "Using Windows 2000/2003" to set up access to remote resources.

Note: Both of your systems must be running on the same operating system. You cannot mix Windows operating systems in this environment. The systems should also operate in the same domain.

Using Windows 2000/2003

1. *Set up a domain user account that your InfoPrint Manager server will run under.*
 - a. Log on to the domain that your InfoPrint Manager servers operate in as a domain administrator.
 - b. Click the Windows **Start** button and select **Programs → Administrative Tools → Active Directory Users and Computers**.
 - c. In the left pane of the Active Directory Users and Computers window, find the Users directory.
 - d. Right-click the Users directory and select **New → User** from the pop-up menu.
 - e. In the first dialog of the New Object – User wizard, type a name for this user in the **Full name** and the **User logon name** fields.

Note: You do not have to fill in the other name fields.
 - f. Click **Next**.
 - g. In the second dialog of the New Object – User wizard, enter a password for this user. Clear all of the check boxes, then select **Password never expires** (so you don't have to change the password and update all of your servers on a regular basis).
 - h. Click **Next** to verify the settings for the user and complete the wizard.
 - i. Once you have created the user, right-click the user in the right pane of the **Active Directory Users and Computers** window and select **Add members to a group** from the pop-up menu.
 - j. In the **Select Group** dialog, find and select the **Domain Administrators** (or **Domain Admins**) group. Click **OK** to add your user to the group.

Note: You can leave the **Name** field blank.

2. *Grant the appropriate user rights to the new domain user on the system that your InfoPrint Manager server runs on.*
 - a. Log on to the system as a user who is a member of the Domain Administrators group.
 - b. Click the Windows **Start** button and select **Settings** → **Control Panel**.
 - c. In the Control Panel window, double-click **Administrative Tools**.
 - d. In the Administrative Tools window, double-click **Local Security Policy**.
 - e. In the right pane of the Local Security Settings window, double-click **Local policies**.
 - f. Double-click **User Rights Assignment** in the right pane.
 - g. In the list of user rights, select **Act as part of the operating system** and double-click it.
 - h. In the **Local Security Policy Setting** dialog, click **Add**.
 - i. In the **Select Users or Groups** dialog, click the arrow on the drop-down list box and select the domain that your InfoPrint Manager servers exist in.
 - j. Find and select the domain user you created and click **Add**.
 - k. Click **OK** in the **Select Users or Groups** dialog.
 - l. Click **OK** in the **Local Security Policy Setting** dialog.
 - m. Repeat from step 2g for two other user rights: **Create permanent shared objects** and **Log on as a service**.
3. *Set up the InfoPrint Manager server to use the new user account.*
 - a. Click the Windows **Start** button and select **Programs** → **InfoPrint Manager** → **Management Console**.
 - b. Stop the InfoPrint Manager server by selecting **File** → **Stop Server**.

Note: If you are not able to stop the server because you are not authorized for that action, check the InfoPrint Manager Access Control List (ACL) for the **Shutdown** operation. Log off and log back on as a user who is on the access control list.
 - c. Select **Edit** → **Service Account/Domain**.
 - d. Enter the name of the domain that the InfoPrint Manager server is installed in and the user name and password from step 1 on page 49
 - e. Click **OK**.
4. *On the machine where the AFP resources reside, share the directory that the resources reside in so the domain user has access to it.*
 - a. Log on to the system that your resources reside on as a user who is a member of the Administrators group.
 - b. Open **Windows Explorer** and navigate to the directory that your resources are stored in.
 - c. Right-click the folder and select **Properties** from the pop-up menu.
 - d. In the **Properties** dialog, click **Security**.
 - e. If **Domain Admins** is not in the **Name** list, click **Add**.
 - f. In the **Select Users, Computers, or Groups** dialog, select the correct domain from the **Look in** drop-down list.
 - g. Select **Domain Admins** in the **Name** list and click **Add**. You might also want to add the local administrators group as well.
 - h. Click **OK**.
 - i. In the **Properties** dialog, make sure that **Full Control** is allowed for **Domain Admins** in the **Permissions** box.

Note: You might want change the access level for the **Everyone** group as well.

- j. Click **Sharing**.
- k. Select **Share this folder**. Verify the name of the folder in the **Share name** field and type a descriptive comment in the **Comment** field.
- l. Click **OK**.
- m. Return to the Management Console on the system that InfoPrint Manager is installed on and click **File** → **Start Server** to restart the InfoPrint Manager server.

Preparing for shared resources with MVS Download

If you are running InfoPrint Manager on Windows 2000, 2003, or XP and will be using MVS Download multiple data set support, you must perform an additional task to share resources on a network drive:

1. Click the Windows **Start** button and select **Settings** → **Control Panel** → **Administrative Tools** → **Services**.
2. Select **InfoPrint Manager MVS Download**.
3. On the **InfoPrint Manager MVS Download Properties (Local Computer)** dialog, click **Log On**, and click **This account**.
4. Enter the account information for the same user you authorized in step 1 on page 49.
5. Click **OK**.

Note: This procedure uses screen captures from Windows 2000. The screens are very similar to this on Windows 2003 and XP.

Telling InfoPrint Manager where your remote resources are located

Once you have made the resources available, you have to make sure the InfoPrint Manager destinations that will be using them know where they are. To complete this configuration:

1. On the system that InfoPrint Manager runs on, map a network drive to the directory that your resources reside in.
 - a. Open Windows Explorer.
 - b. Click **Tools** → **Map Network Drive**.
 - c. Specify the user and password to use.
Windows 2000
 - 1) In the **Map Network Drive** dialog, select a drive letter that you are not currently using from the drop-down menu in the **Drive** field.
 - 2) In the **Folder** field, type the Universal Naming Convention (UNC) name of the directory you shared on the system that your resources are stored on server in this format: `\\resourcesystem\sharename`.
 - 3) Select **Reconnect at logon**.
 - 4) Click **Connect using a different user name**.
 - 5) In the **Connect As** dialog, type the user name and password that you created in step 1 on page 49.
 - 6) Click **OK** in the **Connect As** dialog.
 - 7) Click **Finish** in the **Map Network Drive** dialog.

2. Start the InfoPrint Administration GUI.
3. Select one of the printers that needs to access these resources and right-click it.
4. Select **Properties** from the pop-up menu.
5. In the Properties notebook for this printer, click **AFP Resources**.
6. Find the correct field for your situation. For example, if your directory only holds fonts, find the **Location of fonts** field; if it holds only overlays, find the **Location of overlays** field. However, if the directory holds a variety of resources, find the **Location of resources** field.
7. In the correct field, type the letter of the drive you mapped in step 1c on page 51 and the share name of the directory that contains the resources. For example: x:\afpresources.
8. Click **OK** to close the properties notebook and make the settings take effect.

Chapter 14. Working with SNMP printers

About SNMP communication

For network printers that work with Simple Network Management Protocol (SNMP) and the standard printer management information block (MIB) RFC 1759, the InfoPrint Manager server can use SNMP to automatically:

- Set the default of several InfoPrint Manager actual destination attributes in the printer to the values returned in the standard printer MIB. The actual destination attributes pertain to trays, media, bins, plexes, and sides. This process is called *smart-defaulting* the attributes.
- Detect, report, and recover from printer problems for several conditions, even if no jobs are currently being printed.
- Assess device specific information directly.
- Execute device commands directly on the device.

Smart-defaulting actual destination attributes

The InfoPrint Manager server can automatically smart-default an actual destination attribute for an SNMP printer **only** if an InfoPrint Manager user does one of these:

- Does **not** explicitly set the attribute when creating or modifying the actual destination
- Resets the attribute to the InfoPrint Manager default

Before you create the actual destination and let the server smart-default one or more actual destination attributes for a printer, IBM® recommends that you:

1. Turn the printer on.
2. Make sure the printer is connected to the network.

The actual destination attributes that the server can smart-default are:

- **destination-model**
- **input-trays-medium** (also smart-defaults the attributes **input-trays-supported** and **media-ready**)
- **media-ready**
- **media-supported**
- **output-bin-numbers** (also smart-defaults the attribute **output-bins-supported**)
- **plexes-supported**
- **psf-tray-characteristics** (also smart-defaults the attributes **input-trays-supported** and **media-ready**)
- **sides-supported**

For media, smart-defaulting only detects the **size** of the medium. If you have different media that are the same size (for example, three different letter-size preprinted forms) and you need to differentiate between them in the attributes, you must explicitly set the attributes instead of using smart-defaulting.

Detecting, reporting, and recovering from printer problems

The InfoPrint Manager server can automatically detect, report, and recover from printer problems for several **needs key operator** and **needs attention** conditions as it periodically queries an SNMP printer, even if no jobs are currently being printed. (To turn off automatic recovery, a key operator can manually disable the actual destination.)

For example, the server detects that a printer is out of toner, disables the actual destination, requeues the jobs, and sets the actual destination state to **needs attention** or **needs key operator**. Then, when a key operator replaces the toner, the server detects that the printer is running again, sets the actual destination state to **idle**, and re-enables the actual destination.

Besides automatically managing the state of the actual destination, the InfoPrint Manager server also updates its **problem-message**, **warning-message**, and **snmp-device-conditions** attributes and sends out printer-needs-attention and printer-needs-key-operator notifications. The actual destination's state, which message attribute is updated, and what type of notification is sent depends on the severity of the condition reported by the printer, such as error, warning, or report.

This is the list of SNMP printer conditions that InfoPrint Manager reports:

- Cover open
- Input tray empty
- Interlock open
- Media empty
- Media missing
- Offline
- Paper jam
- Power off
- Service requested
- Fuser over temp
- Input tray missing
- Marker supply empty
- Marker supply missing
- Marker waste full
- Output bin full
- Output bin missing
- Fuser under temp
- Marker supply low
- Marker waste almost full
- Media low
- Moving offline
- Moving online
- Output bin near full
- Warmup

Note: Not all printers report all these conditions. For example, most printers do not report the Warning conditions.

The same condition can be reported with a different severity depending on the situation. For example, a printer might report an input tray empty condition as an error or a warning. It could be a warning if the printer had multiple input trays linked together with the same media and only one of them is empty. If a condition is reported as an error, InfoPrint Manager reports these conditions as needs-key-operator as opposed to needs-attention:

- **fuser-over-temp**
- **fuser-under-temp**
- **marker-supply-empty**
- **marker-supply-low**
- **marker-supply-missing**
- **marker-waste-full**
- **marker-waste-almost-full**
- **media-missing**
- **output-bin-missing**
- **service-requested**
- **warmup**

Regardless of the severity, InfoPrint Manager lists all conditions on the **snmp-device-conditions** attribute.

Accessing device information

You can use the InfoPrint Manager Administration GUI or the **pdls** command to access information about SNMP devices.

Besides providing information about the actual destination object, InfoPrint Manager allows you to access information directly from the printer. InfoPrint Manager uses device-specific attributes to provide this function. While device-specific actual destination attributes are accessed through an actual destination, the information comes from the physical printer. The device-specific attributes are not returned when you ask for all the actual destination's attributes. You have to request the device-specific attributes specifically or you can use **-r all-device** to query all the device-specific attributes.

This is the list of non-settable device-specific actual destination attributes:

- **device-description**
- **device-input-trays**
- **device-ip-address**
- **device-manufacturer**
- **device-marker-supplies**
- **device-media-supported**
- **device-model**
- **device-op-panel-locked**
- **device-output-bins**
- **device-printer-name**
- **device-ready-media**
- **device-serial-number**
- **device-state**
- **device-version**

This is the list of settable device-specific actual destination attributes:

- **device-contact**
- **device-location**

Note:

1. Not all printers report all these attributes.
2. The information returned is not translated.

The InfoPrint Manager Administration Interface can launch a Status window that displays information returned from SNMP. The window lets you see a detailed

view of the status of an SNMP printer. It includes a graphic representation of the printer and its current status, such as whether it has a paper jam or a door open.

To see the Status window from the InfoPrint Manager Administration Interface:

1. Select an SNMP printer.
2. Click **Check Status**.
3. Click **More Information**.

You can use the **pdls** command to access SNMP device information with the **-r** flag, such as output-bins, like this:

```
pdls -c destination -r device-output-bins prt5-ad
```

Note: You can filter for specific device information with the **-f** flag.

You can also use the **pdls** command to access all the information for an SNMP device by specifying the **-r** flag with the **all-device** value.

For more information about the **pdls** command, see the “InfoPrint Manager Tools” chapter in the *InfoPrint Manager: Reference*.

Changing device information

You can use the InfoPrint Manager Administration GUI, the **pddeviceop** command, and the **pdset** command to change information for SNMP devices.

The value of the **snmp-active** actual destination attribute must be **true** and the printer device associated with the actual destination must support the operation. You must have write permission to the actual destination, and **snmp-write-community-name** actual destination attribute must be set properly for the **pddeviceop** command or GUI commands to work.

From the **Device Information** window in the InfoPrint Manager Administration GUI, you can reset the specific device, take it offline, or put it online. You can also change the contact or location information.

You use the **pddeviceop** command to reset a specific device, take it offline, put it online, as well as lock and unlock the operation panel for the specific device.

You can use the **pdset** command or the InfoPrint Manager Administration GUI to change the contact or location information for SNMP devices.

Note: You cannot combine setting device-specific and actual destination attributes in the same **pdset** command.

For more information about the **pddeviceop** and **pdset** commands, see the “InfoPrint Manager Tools” in the *InfoPrint Manager: Reference*.

Setting up and using SNMP

To set up and use SNMP with InfoPrint Manager, you must check and set the appropriate InfoPrint Manager attributes when you create or modify the physical printer in InfoPrint Manager.

This section explains:

- Determining if a printer works with SNMP
- Using the InfoPrint Manager Administration Interface
- Procedures

Determining if a printer works with SNMP

Not all printers work with SNMP and the standard MIB. In addition, only printers that are attached to a network can work with SNMP. Printers that are parallel-attached or channel-attached cannot use SNMP.

To determine if a printer works with SNMP:

1. Set the actual destination attribute **destination-tcpip-internet-address** to the IP address of the printer to indicate that InfoPrint Manager should try to communicate with the printer using SNMP. The server sets the actual destination attribute **use-snmp** to "true".

Note: For PSF TCP-IP attached printers, a destination TCP-IP port number of 5002 must be used when driving the second engine in an InfoPrint 4000 or InfoPrint 4100 dual simplex configuration for SNMP support to work. If 5002 is used for a printer other than one using SNMP, the actual destination for that printer will not work. The server will set the actual destination attribute **use-snmp** to "false".

2. If the server cannot communicate with the printer using SNMP, it **pings** the printer. If the ping command:
 - **Works**, the server concludes that the printer is not an SNMP printer. It sets **use-snmp** to "false".
 - **Does not work**, the server concludes that the printer is turned off or is not currently connected to the network. It leaves **use-snmp** set to "true" and continues trying to establish an SNMP connection with the printer.
3. Check the actual destination attribute **snmp-active**. If it is "true", the printer works with SNMP.

Using the InfoPrint Manager Administration Interface

To use the InfoPrint Manager Administration Interface to check and set the attributes:

1. From the menu bar, select **Printer** or **Server**, as appropriate.
2. Select **Properties**. You see the printer properties or server properties notebook.
3. Select the **SNMP** tab.
4. Check and set the appropriate attributes on the SNMP tab as explained in "Procedures."

Procedures

Do these steps to check and set the attributes:

1. Check these actual destination attributes:
 - **snmp-community-name**
Indicates the name of the SNMP community that the printer belongs to. The default is "public". The field on the SNMP tab is "Community name".
 - **snmp-write-community-name**

Indicates the name of the SNMP write community that the printer belongs to. There is no default. The field on the SNMP tab is "Write community name".

When the **snmp-write-community-name** attribute is set properly and you have write permission to the actual destination, you can set the contact and location information and execute device commands on the printer associated with an actual destination.

- **snmp-retry-count**

Indicates the number of times the server should retry an SNMP request if it fails. The higher the number, the more network traffic. Using a lower number can improve performance. The default is "2". The field on the SNMP tab is "Number of times to retry".

- **snmp-timeout**

Indicates the number of seconds the server should wait for the printer to respond to an SNMP request. Using a lower number can improve performance. The default is "5". The field on the SNMP tab is "Timeout".

- **use-snmp**

Indicates whether the server should try to use SNMP to communicate with the printer. The default is "true". The field on the SNMP tab is "Use SNMP".

2. If the defaults in Step 1 on page 57 in this section are correct, set this actual destination attribute:

- **destination-tcpip-internet-address**

Indicates the IP address of the SNMP printer. The field on the tab is "TCP/IP address".

3. Check this actual destination attribute:

- **snmp-active**

Indicates whether the server has been able to establish an SNMP session with the printer. The field on the SNMP tab is "SNMP is active".

4. Set these server attributes:

- **snmp-discovery-during-startup**

Indicates whether the server queries the printer MIB when InfoPrint Manager starts, or whether the server gets the printer status when it periodically polls the printer. The default is "true", but you might want to set it to "false" if you have several SNMP printers and you want to make the server start faster. The field on the SNMP tab is "Discover printers at startup".

- **snmp-normal-poll-interval**

Indicates the number of seconds that the server should wait after sequentially polling all the SNMP printers **without** known problems. Increasing the polling interval causes the server to use less CPU and network resources for SNMP polling, but it makes the currently shown printer status (for printers that are not currently printing) less accurate. The field on the SNMP tab is "Normal poll interval".

- **snmp-problem-poll-interval**

Indicates the number of seconds that the server should wait after sequentially polling all the SNMP printers **with** known problems. Increasing the polling interval causes the server to use less CPU and network resources for SNMP polling, but it makes the currently shown printer status (for printers that are not currently printing) less accurate. The field on the SNMP tab is "Problem poll interval".

For more information about the SNMP actual destination attributes, see the “InfoPrint Object attributes” chapter in the *InfoPrint Manager: Reference*.

Effects on performance with SNMP

The performance areas that SNMP can influence are:

- Server start-up
- Actual destination queries
- SNMP polling
- Number of SNMP printers on a server

Server start-up

If you set **snmp-discovery-during-startup** to “true”, the server start-up might be slow because the server queries the printer MIB for each SNMP enabled actual destination for the most current information. Setting this attribute to “false” can improve startup performance. However, the initial actual destination status is not current and won’t be until because the server polls the printer next.

Actual destination queries

On an SNMP printer, when you query an actual destination attribute that might be affected by the printer MIB (for example, **destination-state**), the default is that the server uses SNMP at the same time to get the relevant information from the printer. If the printer is turned off or not connected to the network, it might take a long time before the printer times out, which delays the response to your query.

If this is a problem, you can use the **pdlis** command with the **when=now** attribute to return the current information instead of querying the printer MIB. Using this attribute can improve performance.

SNMP polling

The server periodically polls the SNMP printers to get their latest status. If a printer condition changes while the server is polling a printer (for example, a user closes an open cover), the server might temporarily miss one of the changes. However, during the next polling cycle, the server automatically picks up any changes that it missed.

If the server cannot discover an SNMP printer when InfoPrint Manager starts, it shows the printer status from the last time the server was shut down.

Increasing the polling interval causes the server to use less CPU and network resources for SNMP polling, but it makes the currently shown printer status (for printers that are not currently printing) less accurate.

Chapter 15. Creating and managing resource-context objects

Resource-context objects identify the locations of different types of Advanced Function Presentation™ (AFP) resources that jobs sent to PSF physical printers can reference. Resource-context objects let you encapsulate the directory path name in one place. Then you specify the resource-context object name rather than directory names with documents and actual destinations when specifying where to find resources. Later, if the location of a resource changes, you only need to modify the path name specified in the corresponding resource-context object.

The different types of AFP resources are:

Color management resources (CMRs)

CMRs are the foundation of color management in AFP print systems. They provide all the color management information, such as ICC profiles and halftones, that an AFP system needs to process a print job and maintain consistent color from one device to another.

Notes:

1. CMRs are stored in resource libraries that use resource access tables (RATs). When you update an existing CMR or add a new CMR to a resource library, the RAT is updated. You must restart PSF so the changes take effect.
2. CMRs are considered data objects for accounting purposes.
3. For retention of resources across print jobs, CMRs are counted as part of the **maximum-presentation-object-containers-to-keep**.

Data object font resources

A data object font resource can be an OpenType font collection, an OpenType set of linked fonts, or OpenType fonts that are installed in one or more directories on your InfoPrint Manager server. Data object font resources are the only fonts registered through a RAT that are located in the same directory as the fonts. For more information about using data object font resources with InfoPrint Manager, see “Using OpenType Fonts” on page 229.

Data objects

Data objects can be IOCA files or types of files natively supported by a particular model of printer (for example, an EPS file on an InfoPrint Color 130 Plus). In addition, if you use the transforms that come with InfoPrint Manager to convert objects into AFP first, these non-native types of files can be used as data objects. In InfoPrint Manager, data objects are grouped with BCOCA™ and GOCA objects, and they are collectively known as *presentation object containers*.

Note: Data objects are stored in resource libraries that use RATs. When you update an existing data object or add a new data object to a resource library, the RAT is updated. You must restart PSF so the changes take effect.

Fonts A font is a single size and typeface in a particular type family, including letters, numerals, punctuation marks, special characters, and ligatures.

Form definitions

Form definitions provide instructions on how output devices position data

on the page. Form definitions can specify overlays, a paper source for cut-sheet printer devices, duplexed printing, text suppression, data position, and the number and modifications of pages.

Page definitions

Page definitions contain the formatting controls for line data. Page definitions can include controls for the number of lines per logical page, font selection, print direction, and the mapping of individual fields to positions on the logical page.

Page segments

Page segments contain text and images that you can include at any addressable point on a page or an electronic overlay.

Overlays

Overlays are collections of predefined data such as lines, shading, text boxes, or logos, that can merge with variable data on a page or a form during printing or transmission.

You use the **pdcreate** command to identify the directory or directories where the AFP resources reside and provide a name for the resource-context object. You use the **AFP Resources** tab of the actual destination and default document attributes notebooks in the InfoPrint Manager Administration GUI, or the **Command Prompt** window from an InfoPrint Manager for Windows server, to identify the resource-context object name or which paths you want to associate with that object. Jobs can also reference resource-context objects through their contained documents. See “The search order for AFP resources” for the search order InfoPrint uses to locate resource-context objects for a job. Both the actual destination and the resource-context objects that are referenced must reside in the same InfoPrint server.

You can also purchase additional resources or even create your own custom resources. To create page definitions and form definitions, you can purchase the Page Printer Formatting Aid (PPFA) for Windows, which is an optional feature of InfoPrint Manager for Windows.

The search order for AFP resources

This section describes the order and the conditions on which InfoPrint searches for AFP resources:

1. For fonts, paths specified by the **-osrchfontlib** keyword on the **enq**, **lp**, **qprt**, or **lprafp** command
2. Paths specified by the **-oreslib** keyword on the **enq**, **lp**, **qprt**, or **lprafp** command
3. The path specified by the **resource-context-user** document attribute.
4. The paths specified by one of these document attributes, depending on the type of resource:
 - **resource-context-font**
 - **resource-context-form-definition**
 - **resource-context-overlay**
 - **resource-context-page-definition**
 - **resource-context-page-segment**

Note: When one of these document attributes contains a value, InfoPrint ignores any location specified by the same attribute of a default document object if one is used with the job.

5. The path specified by the **resource-context** document attribute.
6. The path specified by the **PSFPATH** environment variable.

If you are using OpenType Fonts, you must allow the Infoprint® Fonts product to install its resource access table for keeping track of these fonts in the default directory. On an InfoPrint Manager Windows server, if you change the location of this table from the folder where it was installed, you can update the global search path on your Windows system with the global resource path for these fonts.

7. The paths specified by the resource-context attributes of the actual destination.
8. For fonts, the directory where your fonts are installed.

Once a resource is located, the search ends, and the located resource is used to process the job, as long as the user can access the resource. If InfoPrint Manager ultimately cannot find a required resource, it prints an error message advising you of the missing resource. InfoPrint Manager reports that the job completed successfully.

If the only AFP resources you use are the AFP resources that shipped with InfoPrint Manager, there is no need to use resource-context objects. All of your resources are located automatically because these resources reside in the **reslib**, **fontlib**, and font directories described above. If, on the other hand, you have custom AFP resources, make sure that you *do not* store them in the **reslib**, **fontlib**, or font directories listed. Any custom resources stored in these locations might be corrupted by installing, uninstalling, or servicing the software. Store any custom AFP resources in a directory outside these locations and use resource-context objects to provide access to them.

When InfoPrint Manager puts together the total of all resource contexts for a particular resource type, InfoPrint Manager tries this list of extensions in order while searching each directory for a particular resource. For example, InfoPrint Manager is searching for a 300–pel raster font named COH20000 and these conditions are true:

- Document attributes are set to `resource-context-font=\myfonts`
- `resource-context=\all_resources`
- The **\$PSFPATH** environment variable has not been set.
- The **resource-context-font** actual destination attribute has not been set.

A list of files similar to this would be checked in sequence:

1. `x:\myfonts\COH20000.300`
2. `x:\myfonts\COH20000.FONT300`
3. `x:\myfonts\COH20000`
4. `x:\all_resources\COH20000.300`
5. `x:\all_resources\COH20000.FONT300`
6. `x:\all_resources\COH20000`
7. With InfoPrint Manager for Windows:
 - a. `c:install_path\reslib\COH20000.300`
 - b. `c:install_path\reslib\COH20000.FONT300`
 - c. `c:install_path\reslib\COH20000`

- d. `c:\font_install_path\afpfonts\C0H20000.300`
- e. `c:\font_install_path\afpfonts\C0H20000.FONT300`
- f. `c:\font_install_path\afpfonts\C0H20000`
- g. `c:\font_install_path\psf\fontlib\C0H20000.300`
- h. `c:\font_install_path\psf\fontlib\C0H20000.FONT300`
- i. `c:\font_install_path\psf\fontlib\C0H20000`

Once InfoPrint Manager finds a matching file, the search ends.

If InfoPrint Manager cannot find the resource in any of the paths, it stops the job and prints an error message at the end of the job.

CMRs and data objects search order

The search order for CMRs and data objects is different from the order used for other AFP resources.

CMRs and data objects must reside in the same directory as the RAT where the resources are identified. That is, the CMR RAT and the data object RAT can be located in different directories, but the resources that are associated with the specific RAT must reside in the same directory as the RAT.

The InfoPrint 5000 printer Models AS1 and AD1/2 and InfoPrint 4100 printers support CMRs and data objects.

The search order for CMRs

InfoPrint Manager searches for CMRs in different locations and in a different order than it uses for other AFP resources.

InfoPrint Manager searches for CMRs in these locations in this order:

1. Inline objects
2. The path specified by the **resource-context-presentation-object-container** document attribute
3. The path specified by the **resource-context** document attribute
4. The path specified by the **PSFPATH** environment variable
5. The path specified by the **resource-context-presentation-object-container** actual destination attribute
6. The path specified by the **resource-context** actual destination attribute
7. The system dependant library:
For Windows, `$$ENV_PDRESLIB`

Notes:

1. InfoPrint searches for CMRs using the UTF-16 name provided in the data stream.
2. If a CMR changes after a job prints, recycle the actual destination by disabling and enabling the connection.

The search order for data objects

InfoPrint Manager searches for data objects in different locations and in a different order than it uses for other AFP resources.

InfoPrint Manager searches for data objects in these locations in this order:

1. Inline objects

2. The path specified by the **resource-context-page-segment** document attribute if object is IOCA that is not installed in a data object RAT
3. The path specified by the **resource-context-presentation-object-container** document attribute
4. The path specified by the **resource-context** document attribute
5. The path specified by the **PSFPATH** environment variable
6. The path specified by the **resource-context-presentation-object-container** actual destination attribute
7. The path specified by the **resource-context** actual destination attribute
8. The system dependant library:
For Windows, `$$ENV_PDRESLIB`

Notes:

1. InfoPrint Manager searches for data objects using the UTF-16 name and the eight-character name provided in the data stream. The search process is different from previous versions. InfoPrint Manager now searches items one through four by UTF-16 name and then search items one through four by eight byte name. Then, InfoPrint Manager searches items five through eight by UTF-16 name and then by eight byte name.
2. If a data object changes after a job prints, recycle the actual destination by disabling and enabling the connection.

Reuse of CMRs and data objects across printer jobs

Using CMRs and data objects in more than one print job can improve printer performance. InfoPrint Manager includes two actual destination attributes that you can use to specify reuse: **maximum-presentation-object-containers-to-keep** and **capture-inline-cmr-resources**.

If you use the same resources (such as company logos) in different print jobs, you can improve print performance by storing those resources on the printer.

Use the **maximum-presentation-object-containers-to-keep** actual destination attribute to specify the maximum number of CMRs and data objects to store in the memory of the printer device between jobs. The default value is 100 objects. Both CMRs and data objects are included in this count.

The printers control the actual retention of resources based on the value of the **maximum-presentation-object-containers-to-keep** actual destination attribute and the available resources downloaded to the printer.

Note: If the printer is reset, the printer memory is cleared.

If you include CMRs inline with your print jobs, you can use the **capture-inline-cmr-resources** actual destination attribute to indicate whether inline CMRs can be captured and reused by PSF TCP/IP printers. Capturing a CMR means the resource is downloaded to the printer and remains resident in the printer memory for future reuse. The default for this attribute is **false** (not active).

File extensions for resources

This table contains file extensions for specific types of resources and lists the order that the extensions are tried by InfoPrint when searching for that resource.

Table 6. File extensions for resources

| <i>Type of Resource</i> | <i>File Extensions Searched (see note)</i> |
|--|---|
| BCOCA (bar code) objects | <ol style="list-style-type: none"> 1. No file extension 2. OBJ 3. OBJECT |
| Code pages | <ol style="list-style-type: none"> 1. ECP 2. No file extension 3. FONT3820 4. FONT38PP 5. CDP 6. FONT300 |
| Coded fonts | <ol style="list-style-type: none"> 1. No file extension 2. FONT3820 3. FONT38PP 4. CFT 5. FONT300 |
| Font character sets, 240-pel resolution | <ol style="list-style-type: none"> 1. No file extension 2. 240 3. FONT3820 4. FONT38PP 5. CFT 6. CDP |
| Font character sets, 300-pel resolution | <ol style="list-style-type: none"> 1. No file extension 2. 300 3. FONT300 4. CFT 5. CDP |
| Outline fonts | <ol style="list-style-type: none"> 1. No file extension 2. OLN 3. FONTOLN 4. CFT 5. CDP |
| TrueType and OpenType fonts, CMRs, and data object resources | Entire file name, including extension; comes from the Resources Access Tables (RATs) created by the AFP Resource Installer. If a CMR or a data object RAT is altered, PSF must be restarted for the changes to take effect. |

Table 6. File extensions for resources (continued)

| <i>Type of Resource</i> | <i>File Extensions Searched (see note)</i> |
|--|---|
| Form definitions | <ol style="list-style-type: none"> 1. No file extension 2. FDEF3820 3. FDEF38PP 4. FDE 5. FIL |
| GOCA (graphics) objects | <ol style="list-style-type: none"> 1. No file extension 2. OBJ 3. OBJECT |
| IOCA (IO image) objects | <ol style="list-style-type: none"> 1. No file extension 2. OBJ 3. OBJECT |
| MO:DCA™ Objects | <ol style="list-style-type: none"> 1. No file extension 2. OBJ 3. OBJECT |
| Overlays | <ol style="list-style-type: none"> 1. No file extension 2. OVLY3820 3. OVLY38PP 4. OVL 5. OLY 6. OVR |
| Page definitions | <ol style="list-style-type: none"> 1. No file extension 2. PDEF3820 3. PDEF38PP 4. PDE |
| Page segments | <ol style="list-style-type: none"> 1. No file extension 2. PSEG3820 3. PSEG38PP 4. PSG 5. PSE |
| Color mapping table | <ol style="list-style-type: none"> 1. No file extension 2. SETUP 3. SET |
| Presentation object container For data object resources not installed in a Resource Access Table (RAT). | <ol style="list-style-type: none"> 1. No file extension 2. DOR |
| Setup data | <ol style="list-style-type: none"> 1. No file extension 2. SETUP 3. SET 4. COMSETUP |
| Note: All file extensions must be in uppercase. | |

Processing resources installed with Resource Access Tables

A RAT maps a resource name specified in the MO:DCA-P data stream to information used to find and process the resource. The resources that are installed with a RAT include:

- TrueType and OpenType fonts
- Color management resources (CMRs)
- Data object resources

In order for **line2afp** to process resources installed with a RAT, you must:

1. Use the InfoPrint AFP Resource Installer or a similar product to install the resources and create RATs in the appropriate resource directories on your system.
2. When invoking **line2afp**, use these parameters on AIX and Windows systems to specify the path names where the RATs and resources are installed in:

| Parameter | Resource Type |
|--------------------------------|-----------------------------|
| FONTPATH | TrueType and OpenType fonts |
| OBJCONDDD, RESLIB, and USERLIB | Object containers and CMRs |
| USERPATH | Any RAT-installed resource |

3. Modify your application to include the RAT-installed resources in a page definition, form definition, or Map Data Resource (MDR) structured field. See *InfoPrint Page Printer Formatting Aid for Windows: User's Guide*, S550-0801, for more information about including resources. You can use the RESTYPE parameter with **line2afp** to control what type of resources are included in the resource type.

Creating a new resource-context object

You create resource-context objects from the **Command prompt** window; you cannot create them through the InfoPrint Manager Administration GUI.

To create a new resource-context object from the command line, type a **pdcreate** command using **-c resource-context** and typing:

1. The **context-address**
2. The server name
3. The resource-context object name

For example, to create a resource-context object named Resfont1 contained in server Server1 that identifies x:\resource\fonts\group1 as the **context-address** or directory containing AFP font resources, enter the command:

```
pdcreate -c resource-context -x "context-address=x:\resource\fonts\group1"  
Server1:Resfont1
```

Notes:

1. Specify a name that uniquely describes the resource-context object in the server. All resource-context objects in a server appear in the selection lists for the fields in the **PSF Resource** tab of the **Printer Properties** window. Two servers can each contain a resource-context object with the same name, but possibly with different values for their attributes.

2. InfoPrint uses **resource-context** object names as values for the lists associated with the fields in the actual destination attributes notebook (**Printer Properties** window) or as valid values you can enter in the fields of the default document attributes notebook. Job submitters can also use them as values for attributes of a document in a job.

For more information about the attributes used in creating resource-context objects, see "Attributes for Resource Contexts" in the *InfoPrint Manager: Reference*.

Changing a directory path for a resource-context object

To change the path to a resource-context object, use the **pdset** command.

For example, to change the path for the resource-context object named Resfont1 contained in server Server1 to x:\resource\fonts\group2 as the directory containing AFP font resources, enter the command:

```
pdset -c resource-context -x "context-address=x:\resource\fonts\group2"  
Server1:Resfont1
```

Chapter 16. Using PSF DSS user-exit programs

This section describes the sample PSF DSS user-exit programs supplied with InfoPrint Manager and shows how you can create your own PSF DSS user-exit programs. These user-exit programs apply to printers connected to InfoPrint Manager through the PSF device support subsystem (DSS).

This chapter contains these topics:

- “Supported types of PSF DSS user-exits”
- “Sample PSF DSS user-exit programs” on page 72
- “Creating and using your own PSF DSS user-exit programs” on page 74
- “Compiling and installing the user-exit program” on page 74
- “The header page and trailer page user-exit programs” on page 79
- “Accounting, post-print accounting, and audit user-exit program inputs and outputs” on page 80
- “Input data user-exit program inputs and outputs” on page 83
- “Output data user-exit program inputs and outputs” on page 85
- “Structure of a user-exit program” on page 86
- “User-exit programs for the line data transform” on page 86
- “Attributes of the line data input file” on page 93
- “Using the uconv command to convert coded character sets” on page 94

Supported types of PSF DSS user-exits

InfoPrint Manager supports dynamically loaded user-exit programs. These programs are loaded with InfoPrint Manager during initialization and are called at various points during job processing.

InfoPrint Manager allows eight different types of PSF DSS user exits. InfoPrint Manager calls the exits in this order:

- Header (Start) page user exit
- Separator page user exit
- Input data user exit
- Output data user exit
- Accounting user exit
- Audit user exit
- Trailer (End) page user exit
- Post-print accounting user exit

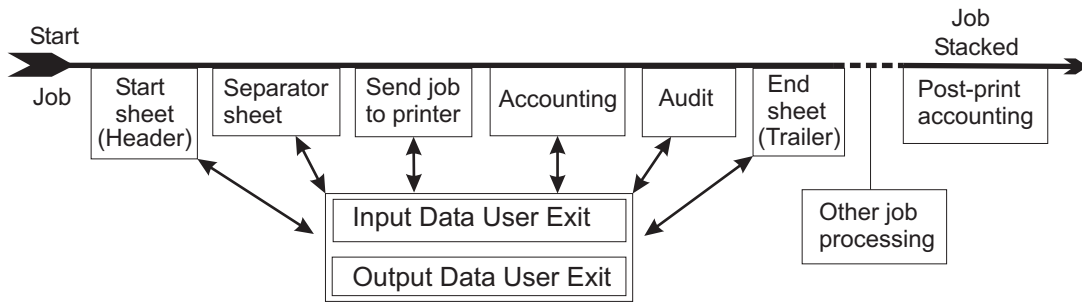


Figure 4. InfoPrint Manager user-exit program order at the printer

Sample PSF DSS user-exit programs

InfoPrint Manager supplies sample PSF DSS user-exit programs for the header, separator, and trailer pages, for accounting and audit data, and for post-print accounting data. The sample header, separator, and trailer page user-exit programs generate Advanced Function Presentation (AFP) data stream pages. The sample accounting and audit user-exit programs generate ASCII data in a report file format or write to a log file. The sample post-print accounting user-exit program only writes to a log file. InfoPrint Manager also supplies sample user-exit programs for input data and output data; however, these user-exit programs do not perform any function. You can use all of these sample programs as they are or you can modify them.

If you choose to modify the existing user-exit programs, the source code for each one is located in the `install_path\exits\psf` directory. The `install_path` is the directory that InfoPrint Manager is installed in. If you don't know the install path, you can find it in the **Management Console**. Open the Management Console, click **Edit → Change Service Configuration** and find the **Install path** field.

Table 1 lists the sample user exit programs supplied with InfoPrint Manager.

Table 7. Sample user-exit programs

| Type of user exit | File Name | Description |
|-------------------|-------------|--|
| Header Page | ainuxhdr.c | Generates brief style start sheet. |
| | ainuxhdr2.c | Generates full style start sheet. |
| | ainuxhdrp.c | Generates start sheet with job ticket information. |
| | ainuxhdrx.c | Generates start sheet without vertical lines. |
| | pduxblkh.c | Generates a blank start sheet. |

Table 7. Sample user-exit programs (continued)

| Type of user exit | File Name | Description |
|-----------------------|----------------------|---|
| Separator Page | ainuxsep.c | Generates brief style separator sheet |
| | ainuxsep2.c | Generates full style separator sheet. |
| | ainuxsepp.c | Generates separator sheet with job ticket information. |
| | ainuxsepx.c | Generates separator sheet without vertical lines. |
| | pduxblks.c | Generates a blank separator sheet. |
| Trailer Page | ainuxtlr.c | Generates brief style end sheet. |
| | ainuxtlr2.c | Generates full style end sheet. |
| | ainuxtlrp.c | Generates start sheet with job ticket information. |
| | ainuxtlrx.c | Generates end sheet without vertical lines. |
| | pduxblkt.c | Generates a blank end sheet. |
| Accounting | ainuxacc.c | Generates brief style accounting sheet. |
| | ainuxacc2.c | Generates full style accounting sheet. |
| | ainacclog.c | Generates accounting log information. |
| | ainuxaccp.c | Generates accounting sheet log with job ticket information. |
| Post-print Accounting | ainuxjobcompletion.c | Generates accounting log information about printed ("stacked") sheets |
| Audit | ainuxaud.c | Generates brief style audit sheet. |
| | ainuxaud2.c | Generates full style audit sheet. |
| | ainuxaudp.c | Generates audit sheet with job ticket information. |
| | ainaudlog.c | Generates audit log information. |
| Input Data | ainuxind.c | Provides template for writing your own user-exit program. |
| Output Data | ainuxout.c | Provides template for writing your own user-exit program. |

Note: For sample user-exit programs used with the line data transform, see "User-exit programs for the line data transform" on page 86.

Creating and using your own PSF DSS user-exit programs

You can create your own PSF DSS user-exit program at any time; however, you must perform additional tasks to produce a PSF DSS user-exit executable program. You must have the Microsoft® Visual Studio 2005 Program installed on your InfoPrint Windows server to compile and build user-exit programs. Be sure to apply the latest service available.

You can create your own user-exit program in one of these ways:

- Copy one of the sample user-exit programs, rename it, and modify it using the Microsoft Visual Studio 2005 Program.
- Write your own user-exit program. You can include the variable data shown in these sections, for example, USERID; but InfoPrint cannot process variable data that is not shown in this section.

ICONV:

If you have written any user-exit programs that use ICONV, you must alter them to use UCONV instead. For more information, see the *InfoPrint Manager: Reference*.

Compiling and installing the user-exit program

You can only specify one user-exit program for each function name provided by InfoPrint per actual destination.

The function name of the user exit must be one of these (in uppercase), because that is the entry point in the module:

- ACCOUNTING
- AUDIT
- JOBCOMPLETION
- HEADER
- SEPARATOR
- TRAILER
- INDATA
- OUTDATA

Activating the user-exit program

Before you can use the new user-exit program, you must activate the program.

To perform this task from the command line, click the Windows **Start** button and select **Programs** → **Command Prompt** and complete these steps:

1. Enter this command: `pdls -c aux -r all servername:`, where *servername* refers to the name of the server you are using.

This command displays the attributes for all current auxiliary sheet objects available on the server. You can also view attributes for a specific auxiliary sheet object. For example, to view attributes for the accounting log, enter this command: `pdls -c aux -r all servername:accounting-log`

2. Use the **pdset** command to change the values of any of the auxiliary sheet objects, as necessary.

From the **InfoPrint Manager Administration GUI**, you must select the printer that you want to associate with an auxiliary sheet (in this case, prt1) and then use the **Printer → Properties** menu to access the **Printer Properties** notebook. To complete this task, see the online help topic *Using auxiliary-sheet objects* in the **InfoPrint Manager Administration GUI**.

To do this task from the command line, complete these steps.

1. To create a new auxiliary-sheet object, type:

```
pdcreate -c aux-sh -x psf-exit-prog-name=fullpath\exit_name  
server1:auxiliary_sheet_name
```
2. Shut down the actual destination (in this case, prt1). `pdshutdown -cp prt1`
3. Associate this new auxiliary-sheet object (in this case, an audit exit) with the actual destination. `pdset -cp -x dest -x audit-exit=auxiliary_sheet_name prt1`

Note: For the post-print accounting exit, instead of this step you will set the attribute in the accounting auxiliary sheet object for the actual destination, using this command: `pdset -c auxiliary-sheet -x psf-post-print-accounting-program-name=fullpath\exit_name servername: accounting-log`

By default, the accounting-log auxiliary sheet object is available for all destinations. This object can point to any combination of the accounting and post-print accounting exits. For example, you can set either one, both, or neither of these attributes at the same time:

```
psf-exit-program-name=name of accounting exit  
psf-post-print-accounting-program-name=name of post-print accounting exit
```

If you want some printers to have different accounting configurations than others, you must create a new auxiliary sheet object for each configuration.

4. Enable the actual destination (in this case, prt1).
`pdenable prt1`

User-exit program structures

All input and output variables used in InfoPrint Manager user-exits are defined through either of these two files:

- The `install_path\psf\exits\ainuexit.h` file
- The `install_path\psf\exits\ainurpt.h` file

The `ainuexit.h` file contains definitions for the header, trailer, separator, accounting, audit, and post-print accounting exits, while the `ainurpt.h` file formats data for these executable reporting utilities that apply to the accounting, audit, and post-print accounting exits:

- Accounting Log
 - `ainurpt1`
 - `ainurpt2`
 - `ainurpt3`
- Audit Log
 - `ainurpt4`
 - `ainurpt5`
 - `ainurpt6`
- Post-print Accounting Log

- ainurpt7
- ainurpt8
- ainurpt9

These user-exit program structure files are written in the C programming language. The declarations and statements in these files show the structure of the InfoPrint Manager user-exit programs, which are imbedded as part of the user-exit program.

Common input and output fields

These fields can be found in the user-exit programs. For a detailed list of input and output fields according to user-exit, see the *install_path\psf\exits\ainuexit.h* file. This information can be specified from:

- Migrated jobs
- MVS Download jobs
- Fields set in the InfoPrint Manager Administration Interface Job and Document Defaults notebook

UserID

Identifies the system user ID of the person who submitted the job.

The **Userid** field value can be any null-terminated (X'00') character string. You should limit the string to 10 or less characters.

NodeID

Identifies the name of the system (host). The backend program sets the NodeID.

The **Nodeid** field value can be any null-terminated (X'00') character string. You should limit the string to 10 or less characters.

Jobname or Name

Identifies the name of the job. This is the same as the file name in the job.

Job submitters can also specify the job name with the InfoPrint Manager job attribute **job-name=name** or **name=name** when they submit a job. If the job name is not specified for files defined as PCL, PostScript, line data, unformatted ASCII, double-byte character set (DBCS) ASCII, or PDF, when the job is submitted, InfoPrint creates a temporary file for the transform output. InfoPrint uses the temporary file name for the job name.

This field value can be any null-terminated (X'00') character string. You should limit the string to 24 or less characters.

SpoolID

Identifies the PSF job ID, which is an integer. InfoPrint Manager sets the SpoolID.

PrinterName

Identifies the first eight characters of the InfoPrint Manager destination name.

hab This function is not used.

Date Identifies the date the job is printed in MM/DD/YY format.

Time Identifies the time the job is printed in HH:MM:SS format.

Distribution

Identifies the distribution information provided when the job is submitted.

PagePointer

Points to a buffer containing the header page or trailer page data produced by the exit.

PageSize

Indicates the size of the header page or trailer page data returned by the exit. This field is initially set to 0 before the exit is called. If no data is generated by the exit, this field remains set at 0.

PageType

Indicates the type of header or trailer page data (if any) that the exit generates. The field is initially set to 0 (AFP data stream) before the exit is called. Valid values are:

- 0 AFP data stream
- 1 ASCII data

Job Completion

Indicates the status returned by the exit. This field is initially set to 0 before the exit is called. Valid return codes are:

- 0 Good completion, all done, accept resultant page.
- 1 Bad completion, non-fatal error, no page generated.
- 5 Bad completion, fatal error. The exit is disabled until you shut down the actual destination.
- 8 Bad completion, terminate the current job.
- 12 Bad completion: terminate the job and put it in pending state. In addition, InfoPrint disables the actual destination.

Account

Identifies the account information provided when the job is submitted. The **Account** field value can be any null-terminated (X'00') character string. You should limit the string to 20 characters or less. Job submitters can specify this same information through the **account-text** document attribute.

Address1

Identifies the first line of address information provided when the job is submitted.

The **Address1** field value can be any null-terminated (X'00') character string. You should limit the string to 57 or less characters.

Address2

Identifies the second line of address information provided when the job is submitted.

The **Address2** field value can be any null-terminated (X'00') character string. You should limit the string to 57 or less characters.

Address3

Identifies the third line of address information provided when the job is submitted.

The **Address3** field value can be any null-terminated (X'00') character string. You should limit the string to 57 or less characters.

Address4

Identifies the fourth line of address information provided when the job is submitted.

The **Address4** field value can be any null-terminated (X'00') character string. You should limit the string to 57 or less characters.

Account

Identifies the account information provided when the job is submitted.

The **Account** field value can be any null-terminated (X'00') character string. You should limit the string to 20 or less characters.

Building

Identifies the building information provided when the job is submitted.

The **Building** field value can be any null-terminated (X'00') character string. You should limit the string to 24 or less characters. You can specify this same information through the **building-text** document attribute.

Department

Identifies the department information provided when the job is submitted.

The **Department** field value can be any null-terminated (X'00') character string. You should limit the string to 24 or less characters. You can specify this same information through the **department-text** document attribute.

Passthru

Identifies any other information provided when the job is submitted that will be passed through the user-exit to the backend program.

These **Passthru** flags are supported:

class Identifies the one-character class attribute.

destination

Identifies the one-to eight-character destination attribute.

forms Identifies the one-to eight-character forms attribute.

segmentid

Identifies the one-to ten-character segmentation identifier.

ServerJobID

Identifies the job identifier.

The **Passthru** field value can be any null-terminated (X'00') character string no greater than 1,024 characters.

Programmer

Identifies the programmer information provided when the job is submitted.

The **Programmer** field value can be any null-terminated (X'00') character string. You should limit the string to 24 or less characters. You can specify this same information through the **programmer-text** document attribute.

Room Identifies the room information provided when the job is submitted.

The **Room** field value can be any null-terminated (X'00') character string. You should limit the string to 24 or less characters. You can specify this same information through the **room-text** InfoPrint document attribute.

Title Identifies the title information provided when the job is submitted.

The **Title** field value can be any null-terminated (X'00') character string. You should limit the string to 24 or less characters. You can specify this same information through the **title-text** document attribute.

LongPrinterName

The full name of the InfoPrint destination.

Note: Because InfoPrint Manager only allows eight character names, PrinterName and LongPrinterName are the same.

The header page and trailer page user-exit programs

Because the InfoPrint Manager start page and trailer page user-exit programs require the same inputs and produce the same outputs, the program descriptions are similar.

The source code (in the C programming language) for the sample header page user-exit programs and trailer page user-exit programs listed in “Sample PSF DSS user-exit programs” on page 72 are located in the *install_path\exits\psf* directory. These sample programs generate an AFP data stream page.

The data structures for the header and trailer page user-exit programs are included with the source code in the *install_path\exits\psf\ainuexit.h* file. The code for these structures is shown in “User-exit program structures” on page 75.

The declaration of these exits is:

```
void HEADER (HEADER_EXITDATA *exitdata)
void TRAILER (TRAILER_EXITDATA *exitdata)
```

The **HEADER_EXITDATA** and the **TRAILER_EXITDATA** input/output parameters contain all of the input and output data needed to communicate between InfoPrint Manager and the user-exit programs.

See “Common input and output fields” on page 76 and the *ainuexit.h* file for explanations of the function and structure of the various components of this user-exit.

After you create your header page or trailer page user-exit program, you must use the AIX **make** command to compile the code (see “Compiling and installing the user-exit program” on page 74).

The separator page user-exit program

The InfoPrint Manager separator page user-exit program is called before copies of a job (including the very first copy) print. This exit is also called before the error messages and the trailer page (Figure 4 on page 72).

The source code (in the C programming language) for the sample separator page user-exit programs listed on page 72 are located in the *install_path\exits\psf* directory. These sample programs generate an AFP data stream page.

The data structures for the separator page user-exit program are included with the source code in the *install_path\exits\psf\ainuexit.h* file. The code for these structures is shown in “User-exit program structures” on page 75.

The declaration of this exit is:

```
void SEPARATOR (SEPARATOR_EXITDATA *exitdata)
```

The **SEPARATOR_EXITDATA** input/output parameter contains all the input and output data needed to communicate between InfoPrint Manager and the user-exit program.

See “Common input and output fields” on page 76 and the **ainuexit.h** file for explanations of the function and structure of the various components of this user-exit.

This field is also found in the separator page user-exit program and provides output information:

Copy Indicates which copy is associated with this call to the exit. Initially set to 1, it increments by one each time the exit is called. The sample separator page user-exit program generates one separator page for the first copy and all subsequent copies of the job.

After you create your separator page user-exit program, you must use the AIX **make** command to compile the code (see “Compiling and installing the user-exit program” on page 74).

Accounting, post-print accounting, and audit user-exit program inputs and outputs

The InfoPrint Manager accounting and audit user-exit programs require the same inputs and produce the same outputs so the program descriptions are the same. The post-print accounting user-exit program requires more inputs and produces more outputs.

The source code (in the C programming language) for the sample separator page user-exit programs listed in “Supported types of PSF DSS user-exits” on page 71 are located in the *install_path*\exits directory.

The sample programs store the data into a file you can access with these executable reporting utilities:

ainurpt1

Provides accounting data for the actual destinations defined, based upon the destination ID.

ainurpt2

Provides accounting data for the actual destinations defined, based upon the userid.

ainurpt3

Provides detailed accounting data for the destinations defined, based upon the particular userid supplied.

ainurpt4

Provides audit data for the actual destinations defined, based upon the destination ID.

ainurpt5

Provides audit data for the actual destinations defined, based upon the userid.

ainurpt6

Provides detailed audit data for the actual destinations defined, based upon the particular userid supplied.

ainurpt7

Provides post-print accounting data stored in **jobcompletion.log**, sorted by actual destination.

ainurpt8

Provides summary post-print accounting data stored in **jobcompletion.log**, sorted by job submitter.

ainurpt9

Provides detailed entries of times and pages printed for a specific job submitter in **jobcompletion.log**.

The source code for these reporting utilities is also located in the *install_path*\exits\psf directory.

These executable reporting utilities are located in the *install_path*\bin folder. By specifying these executable reporting utilities at the DOS command line, you can display data by either destination ID or userid. For example, to report on print requests submitted by a specific user to a actual destination for which the accounting user exit has been activated, you can specify **ainurpt3** and then provide the userid to the program.

Note: You must activate these exits to generate the log files used by these report programs. For more information about activating these exits, see “Activating the user-exit program” on page 74.

The data structures for the accounting, audit, and post-print accounting user-exit programs are included with the source code in the *install_path*\exits\psf\ainuexit.h and *install_path*\exits\paf\ainurpt.h files. The code for these structures is shown in “Structure of a user-exit program” on page 86.

The declarations of these exits are:

```
void ACCOUNTING (ACCOUNTING_EXITDATA *exitdata)
void AUDIT (AUDIT_EXITDATA *exitdata)
void JOBCOMPLETION (JOBCOMPLETION_EXITDATA *exitdata)
```

The **ACCOUNTING_EXITDATA**, **AUDIT_EXITDATA**, and **JOBCOMPLETION_EXITDATA** input and output parameters contain all the input and output data needed to communicate between InfoPrint and the user-exit programs.

The **ACCOUNTING_EXITDATA**, **AUDIT_EXITDATA**, and **JOBCOMPLETION_EXITDATA** structures include these fields.

To build the executable program, you must use the Microsoft Visual Studio 2005 Program, pull-down menu.

Fields that provide information for accounting, audit, and post-print accounting user-exit programs

These fields are also found in the accounting, audit, and post-print accounting user-exit programs.

Pages Printed (accounting and audit user-exit only)

Shows the total number of impressions processed for this job.

Bin One Sheets Processed (accounting and audit user-exit only)

Shows the total number of processed sheets that were selected from the primary bin.

Bin Two Sheets Processed (accounting and audit user-exit only)

Shows the total number of processed sheets that were selected from bins other than the primary bin.

User Pages Stacked by Bin (post-print accounting user-exit only)

Shows the total number of stacked pages in the user print file. It does not include system pages, such as the header page, in the count.

User Sheets Stacked by Bin (post-print accounting user-exit only)

Shows the total number of stacked sheets in the user print file. It does not include system pages, such as the header page, in the count.

Pages Stacked by Bin (post-print accounting user-exit only)

Shows the total number of pages stacked for this job by bin.

Sheets Stacked by Bin (post-print accounting user-exit only)

Shows the total number of sheets stacked for this job by bin.

Data Object Resources

Shows the total number of Data Object Resources, which can consist of PDF pages, IOCA images, and Encapsulated PostScript (EPS) files, used in this job. Data Object Resources are also known as presentation-object containers (for more information, see the **presentation-object-container** attributes in the *InfoPrint Manager: Reference*).

Note: The counters do not include resources contained in the input file. The counters only include resources used before the accounting or audit user-exit is called. Therefore, the resources required for printing error messages and the trailer page do not appear in the resource totals.

Job Copies Requested (post-print accounting user-exit only)

Shows the total number of **results-profile** job copies requested in the job.

Fonts used

Shows the total number of fonts used in this job.

Note: The counters do not include resources contained in the input file. The counters only include resources used before the accounting or audit user-exit is called. Therefore, the resources required for printing error messages and the trailer page do not appear in the resource totals.

Overlays used

Shows the total number of overlays used in this job.

Note: The counters do not include resources contained in the input file. The counters only include resources used before the accounting or audit user-exit is called. Therefore, the resources required for printing error messages and the trailer page are not included in the resource totals.

Segments used

Shows the total number of page segments used in this job.

Note: The counters do not include resources contained in the input file. The counters only include resources used before the accounting or audit user-exit is called. Therefore, the resources required for printing error messages and the trailer page are not included in the resource totals.

ExtStart Date

Identifies the date the job started processing.

Start Date

The date the job started processing.

Start Time

The time the job started processing.

ExtStop Date

The date the job finished processing.

Stop Date

The date the job finished processing.

Stop Time

The time the job finished processing.

Completion Date (post-print accounting user-exit only)

The date all pages in the job printed and stacked.

Note: If errors or operator commands affect the job so that all pages are not sent to the printer, this field indicates the time when all pages sent are printed and stacked.

Completion Time (post-print accounting user-exit only)

The time all pages in the job printed and stacked.

Note: If errors or operator commands affect the job so that all pages are not sent to the printer, this field indicates the time when all pages sent are printed and stacked.

DORU

The data object resources used (DORU) by the exit.

DOFU The data object fonts used (DOFU) by the exit.

Input data user-exit program inputs and outputs

The InfoPrint Manager input data user-exit program can be used to:

- Monitor the incoming print data stream to InfoPrint Manager
- Discard an input record before it is processed
- Replace an existing input record with one or more records (which might include the original record or a modified version of the original record)
- Continue processing with the input record unchanged

This exit can be called for all parts of the job (see Figure 4 on page 72).

Note: The input data user-exit program only processes MO:DCA data.

If you are using the exit to insert extra input records, the original input record that is passed to the exit can be processed before or after the extra input records. This means that the extra input records can be inserted before or after the current structured field depending on where the current structured field is placed in the list of structured fields to insert.

Important considerations

- Code processing becomes an integral part of PSF and can affect performance and reliability.
- User exits should be coded by experienced programmers who are aware of overall system implications.

- Any delays caused by this exit will translate into a PSF processing delay and **could affect printer performance.**
- This exit is not passed any structured fields that are contained in resources that are processed. This includes: form definitions, overlays, page segments, fonts, data object resources, internal medium maps, and data object fonts.
- Code processing must be able to handle PSF repositioning.

Repositioning might occur as a result of errors or operator commands. PSF might reposition items forward into the print job, skip structured fields, or reposition items back into previously processed data. If PSF repositions back into the print file, it is the responsibility of the exit to return the same data in the same sequence to PSF, just as it did when the structured field was originally passed to the exit.

Because of the constraints outlined above, you should first consider using the transform subsystem to process data, because the transform subsystem does not have these limitations. For example, a transform object would have access to all of the input data (no restrictions) and could add, delete, and modify both resources and pages. In addition, the transform subsystem processing is performed before printing begins, so it would have no impact on printer performance or behavior.

The Input Data User Exit is not capable of identifying individual document boundaries in a data stream. For example, your job might have 5 separate documents that each contain 10 pages of data. This is viewed by the exit as 50 pages of data, not 5 units of 10. The transform subsystem does not have this limitation.

The PSF Input Record Exit is responsible for managing any memory it allocates. It can reuse the memory across calls through the use of a work area pointer provided in **ainuexit.h**. PSF does not free any memory that might be pointed to by fields in either the `INDATA_EXITDATA` structure or the `PSFINSERTRECS` structure. The exit can point to memory that it has defined or allocated. The exit can reuse allocated memory or free memory when it is appropriate. PSF might run out of memory if the PSF Input Record Exit mismanages memory.

The source code (in the C programming language) for the sample input data user-exit program listed on page “Sample PSF DSS user-exit programs” on page 72 is in the `install_path\exits\psf\ainuxind.c`. This sample program consists of a return code and performs no function.

The data structures for the input data user-exit program are included with the source code in the `install_path\exits\psf` directory.

The declaration of this exit is:

```
void INDATA (INDATA_EXITDATA *exitdata)
```

The `INDATA_EXITDATA` input/output parameter contains all of the input and output data needed to communicate between InfoPrint Manager and the user-exit program.

The `INDATA_EXITDATA` structure includes these fields. These fields provide input information:

version

This variable was formerly called `reserved1`. It is designed for use as a migration aid for future variants of this exit. It contains a version identifier for this structure:

- X'00'= previous version (before August, 2005)
- X'01'= August, 2005 version adding support for deletion and insertion of input records

Copy Indicates which copy is associated with this call to the exit. Initially set to 1, it increments by one each time the exit is called.

DataSize

Contains the length of the input data record

DataPointer

Points to the input data record to be processed.

DataType

Always set to 0 (AFP; MO:DCA data only).

Note: If the exit is being called to indicate end of job processing:

- DataSize is set to 0,
- DataPointer is set to NULL
- DataType is set to 0 — no record is passed in at that time

The **PSFINSERTRECS** structure contains information about a structured field that is to be inserted at the request of the Input Data Exit. The **PSFINSERTRECS** structure contains these fields:

version

Version identifies to PSF the version of the **PSFINSERTRECS** structure that is being supplied. The exit must supply a value of 0x01 or the record (including the next_p pointer) is ignored.

next_p

Contains the pointer to the next record to insert.

record_p

Contains the pointer to the MO:DCA (AFP) structured field to be inserted.

Important

See more data definitions and comments in the **ainuexit.h** source file located in *install_path\exits\psf*.

Note: The input information fields used by some of the sample programs are available through the alternate sample user exits. InfoPrint Manager does not provide an alternate Input Data User Exit.

Ouput data user-exit program inputs and outputs

The InfoPrint output data user-exit program is used to monitor the outgoing print data stream from InfoPrint. This exit is called at the end of the job before the error messages and the trailer page. The input and output data exits are one-directional, that is, it can read the data but cannot alter it.

The source code (in the C programming language) for the sample input data user-exit program listed in “Supported types of PSF DSS user-exits” on page 71 is in the *install_path\exits\psf\ainuxout.c* file. This sample program consists of a return code and performs no function.

The data structures for the output data user-exit program are included with the source code in the *install_path\exits\psf\ainuexit.h* file. The code for these structures is shown in "Structure of a user-exit program."

The declaration of this exit is: `void OUTDATA (OUTDATA_EXITDATA \exitdata)`

The **OUTDATA_EXITDATA** input/output parameter contains all the input and output data needed to communicate between InfoPrint and the user-exit program.

To build the executable program, you must use the Microsoft Visual Studio 2005 Program pull-down menu.

These fields are also found in the output data user-exit program:

Copy Indicates which copy is associated with this call to the exit. Initially set to 1, it increments by one each time the exit is called.

DataSize
Indicates the number of bytes in the buffer.

DataPointer
Points to a buffer containing the outgoing print data stream.

Structure of a user-exit program

All input and output variables used in InfoPrint user exits are defined through either of these two files:

- *install_path\exits\psf\ainuexit.h* or
- *install_path\exits\psf\ainurpt.h*

The *ainuexit.h* file contains definitions for the header, trailer, separator, accounting, audit, and post-print accounting exits, while the *ainurpt.h* file formats data for these executable reporting utilities:

- Accounting Log – (**ainurpt1; ainurpt2; ainurpt3**)
- Audit Log – (**ainurpt4; ainurpt5; ainurpt6**)
- Post-print Accounting Log – (**ainurpt7; ainurpt8; ainurpt9**)

These user-exit program structure files are written in the C programming language. The declarations and statements in these files show the structure of the InfoPrint PSF user-exit programs, which are imbedded as part of the user-exit program.

User-exit programs for the line data transform

InfoPrint provides several sample user-exit programs for the line-data transform. Use of the user exits is optional. You specify the names of the exit programs with the **inpxit**, **indxexit**, **outexit**, and **resexit** keywords.

InfoPrint provides these sample programs:

install_path\exits\acif\apkinp.c
Input-record user exit

install_path\exits\acif\apkout.c
Output-record user exit

install_path\exits\acif\apkres.c
Resource exit

In addition, InfoPrint provides these input-record user exits programs to translate input data streams:

- apka2e
- asciinp
- asciinpe

apka2e

install_path\exits\acif\apka2e.c

Converts ASCII stream data to EBCDIC stream data.

The **apka2e** input-record exit program translates data that is encoded in one code character set (CCSID) to another. You should use this exit when your job uses fonts such as GT12, which has code points that are different from your data file. The default translation is from ASCII (code set 00850) to EBCDIC (code set 00037) if the **INPCCSID** and **OUTCCSID** parameters are not specified on the **line2afp** command. **INPCCSID** specifies the input code page, and **OUTCCSID** specifies the output code page.

To execute the **apka2e** input record exit program, set these keywords and values in your line-data transform keyword file. The **line2afp parmdd** keyword identifies the keyword file.

```
inpexit=install_path\bin\apka2e.dll  
cc=yes  
cctype=z
```

asciinp.c

install_path\exits\acif\asciinp.c

Converts unformatted ASCII data that contains carriage returns and form feeds into a record format that contains an American National Standards Institute (ANSI) carriage control character. This exit encodes the ANSI carriage control character in byte 0 of every record.

The **asciinp** input-record exit program transforms an ASCII data stream into a record format that contains a carriage control character in byte 0 of every record. If byte 0 of the input record is an ASCII carriage return (X'0D'), byte 0 is transformed into an ASCII space (X'20') that causes a data stream to return and advance one line; no character is inserted. If byte 0 of the input record is an ASCII form feed character (X'0C'), byte 0 is transformed into an ANSI skip to channel 1 command (X'31') that serves as a form feed in the carriage-control byte.

To execute the **asciinp** input record exit program, set these keywords in your line-data transform keyword file. The **line2afp parmdd** keyword identifies the keyword file:

```
inpexit=install_path\bin\asciinp.dll  
cc=yes  
cctype=z
```

asciinpe.c

install_path\exits\acif\asciinpe.c

Converts unformatted ASCII data into a record format just as **asciinp.c** does, and then converts the ASCII stream data to EBCDIC stream data.

The **asciinpe** input-record exit program combines both of the user input-record exits described above. To execute, specify `inpexit=install_path\bin\asciinpe.dll` as the exit program in the keyword file and follow the directions specified for both **apka2e** and **asciinp**.

The **asciinpe.c** input-record exit program translates data that is encoded in one code character set (CCSID) to another. You should use this exit when your job uses fonts such as GT12, which has code points that are different from your data file. The default translation is from ASCII (code set 00850) to EBCDIC (code set 00037) if the **INPCCSID** and **OUTCCSID** parameters are not specified on the **line2afp** command. **INPCCSID** specifies the input code page, and **OUTCCSID** specifies the output code page.

While the **asciinp** and **asciinpe** input-record exits do not recognize other ASCII printer commands, you can modify these exits to account for these:

- backspacing (X'08')
- horizontal tabs (X'09')
- vertical tabs (X'0B')

In addition to the information above, see the prolog of the **asciinp.c** source file that is provided with InfoPrint Manager in the `install_path\exits\acif` directory for more information about using and modifying these programs.

The C language header file for all ACIF exit programs is provided in `install_path\exits\acif\apkexits.h` along with the build rules for the ACIF user exits in `install_path\exits\acif\Makefile`.

To build the executable program, you must use the Microsoft Visual Studio 2005 Program, pull-down menu.

Input record exit

The line-data transform provides an exit that enables you to add, delete, or modify records in the line-data input file. The program invoked at this exit is defined by the value of the **inpexit** keyword of the **line2afp** command.

This exit is called after each record is read from the input file. The exit can request that the record be discarded, processed, or processed with control returned to the exit for the next input record. The largest record that InfoPrint Manager can process is 32756 bytes. This exit is not called when the line-data transform is processing resources from directories.

This example provides a sample C language header that describes the control block that is passed to the exit program:

```

/*****
/* INPEXIT STRUCTURE
*****/
typedef struct _INPEXIT_PARAMS /* Parameters for input record exit */
{
    char          *work;          /* Address of 16-byte static work area */
    PFATTR        *pattr;        /* Address of print file attribute info*/
    char          *record;       /* Address of the input record */
    unsigned short in_CCSID;     /* input CCSID for translating @006a*/
    unsigned short out_CCSID;    /* output CCSID for translating @006a*/
    unsigned short recordln;     /* Length of the input record */
}

```

```

    unsigned short reserved2; /* Reserved for future use      */
    char          request;   /* Add, delete, or process the record */
    char          eof;       /* EOF indicator                       */
} INPEXIT_PARMS;

```

The address of the control block containing these parameters is passed to the input record exit:

work (Bytes 1–4)

A pointer to a static, 16-byte memory block. The exit program can use this parameter to save information across calls (for example, pointers to work areas). The 16-byte work area is aligned on a full word boundary and is initialized to binary zeros before the first call. The user-written exit program must provide the code required to manage this work area.

pfattr (Bytes 5–8)

A pointer to the print file attribute data structure. For more information about the format of this data structure and the information it contains, see “Attributes of the line data input file” on page 93.

record (Bytes 9–12)

A pointer to the first byte of the input record including the carriage control character. The record is in a buffer that is located in a storage allocated by the line-data transform but the exit program is allowed to modify the input record.

in_CCSID (Bytes 13-14)

The value from the **INPCCSID** parameter on the **line2afp** command.

out_CCSID (Bytes 15-16)

The value from the **OUTCCSID** parameter on the **line2afp** command.

recordln (Bytes 17–18)

Specifies the number of bytes (length) of the input record. If the input record is modified, this parameter must also be updated to reflect the actual length of the record.

reserved2 (Bytes 19–20)

These bytes are reserved for future use.

request (Byte 21)

Specifies how the line-data transform processes the record. On entry to the exit program, this parameter is X'00'. When the exit program returns control to line-data transform, this parameter must have the value X'00', X'01', or X'02', where:

X'00' Specifies that the line-data transform should process the record.

X'01' Specifies that the line-data transform should not process the record.

X'02' Specifies that the line-data transform should process the record and then return control to the exit program to allow it to insert the next record. The exit program can set this value to save the current record, insert a record, and then supply the saved record at the next call. After the exit inserts the last record, the exit program must reset the request byte to X'00'.

A value of X'00' on entry to the exit program specifies that the record be processed. To ignore the record, change the request byte value to X'01'. If you want the record to be processed, and you want to insert an additional record, change the request byte value to X'02'. Any value greater than X'02' is interpreted as X'00', and the exit processes the record.

Note: Only one record can reside in the buffer at any time.

eof (Byte 22)

An end-of-file (eof) indicator. This indicator is a one-byte character code that specifies whether an eof condition has been encountered.

When eof is signaled (eof value='Y'), the last record has already been presented to the input exit, and the input file has been closed. The pointer record is no longer valid. Records cannot be inserted when eof is signaled. These are the only valid values for this parameter:

Y **Specifies that eof has been encountered.**

N **Specifies that eof has not been encountered.**

This end-of-file indicator allows the exit program to perform some additional processing at the end of the file. The exit program cannot change this parameter.

Output record exit

Using the output-record exit, you can modify or ignore the records the line-data transform writes into the output file. The program invoked at this exit is defined by the outexit keyword of the **line2afp** command.

The exit receives control before a record (structured field) is written to the output document file. The exit can request that the record be ignored or processed. The largest record that the exit can process is 32752 bytes, not including the record descriptor word. The exit is not called when the line-data transform is processing resources.

This example contains a sample C language header that describes the control block passed to the exit program:

```
typedef struct _OUTEXIT_PARMS /* Parameters for resource record exit      */
{
    char          *work;          /* Address of 16-byte static work area */
    PFATTR        *pfattr;       /* Address of print file attribute info */
    char          *record;       /* Address of the record to written    */
    unsigned short recordln;     /* Length of the output record        */
    char          request;       /* Delete or process the record       */
    char          eof;          /* Last call indicator                */
}OUTEXIT_PARMS;
```

The address of the control block containing these parameters is passed to the output record exit:

work (Bytes 1–4)

A pointer to a static, 16-byte memory block. The exit program can use this parameter to save information across calls (for example, pointers to work areas). The 16-byte work area is aligned on a full word boundary and is initialized to binary zeros before the first call. A user-written exit program must provide the code required to manage this work area.

pfattr (Bytes 5–8)

A pointer to the print file attribute data structure. For more information about the format of this data structure and the information it contains, see "Attributes of the line data input file" on page 93.

record (Bytes 9–12)

A pointer to the first byte of the output record. The record is in a 32KB

(where KB equals 1024 bytes) buffer. The buffer is located in storage allocated by the line-data transform, but the exit program is allowed to modify the output record.

recordln (Bytes 13–14)

Specifies the length, in bytes, of the output record. If the output record is modified, this parameter must also be updated to reflect the actual length of the record.

request (Byte 15)

Specifies how the line-data transform processes the record. On entry to the exit program, this parameter is X'00'. When the exit program returns control to the line-data transform, this parameter must have the value X'00' or X'01', where:

X'00' Specifies that the line-data transform should process the record.

X'01' Specifies that the line-data transform should not process the record.

A value of X'00' on entry to the exit program specifies that the record be processed. To ignore the record, change the request byte value to X'01'. Any value greater than X'01' is interpreted as X'00'; the exit processes the record.

Note: Only one record can reside in the buffer at any time.

eof(Byte 16)

An end-of-file (eof) indicator. This indicator is a one-byte character code that signals when the line-data transform has finished writing the output file.

When eof is signaled (eof value='Y'), the last record has already been presented to the output exit. The pointer record is no longer valid. Records cannot be inserted after eof is signaled. These are the only valid values for this parameter:

Y Specifies that the last record has been written.

N Specifies that the last record has not been written.

This end-of-file flag, used as a last-call indicator, allows the exit program to return control to the line-data transform. The exit program cannot change this parameter.

Resource exit

The line-data transform provides an exit that enables you to filter (exclude) resources. This exit is useful in controlling resources at the file-name level. For example, assume you only wanted to use those fonts that are not shipped with InfoPrint Manager. You could code this exit program to contain a table of all fonts shipped with InfoPrint and filter those from the resource file. Security is another consideration for using this exit because you could prevent certain named resources from being included. The program invoked at this exit is defined by the `resexit` keyword of the `line2afp` command.

This exit receives control before a resource is read from a directory. The exit program can request that the resource be processed or ignored (skipped), but it cannot substitute another resource name in place of the requested one. If the exit requests that any overlay be ignored, the line-data transform automatically ignores any resources the overlay might have referenced (that is, fonts and page segments).

This example contains a sample C language header that describes the control block passed to the exit program:

```
/******  
/* RESEXIT STRUCTURE */  
/******  
typedef struct _RESEXIT_PARMS /* Parameters for resource record exit */  
{  
    char          *work;          /* Address of 16-byte static work area */  
    PFATTR        *pfattr;        /* Address of print file attribute info*/  
    char          resname[8];     /* Name of requested resource (8 byte) */  
    char          restype;        /* Type of resource */  
    char          request;        /* Ignore or process the resource */  
    char          eof;           /* Last call indicator */  
    unsigned short resname1;     /* Length of resource name @05A*/  
    char          pad1[3];        /* padding byte @05A*/  
    char          resnamf[250];   /* Rsrc name if more than 8 bytes@05A*/  
} RESEXIT_PARMS;
```

The address of the control block containing these parameters is passed to the resource record exit:

work (Bytes 1–4)

A pointer to a static, 16-byte memory block. The exit program can use this parameter to save information across calls (for example, pointers to work areas). The 16-byte work area is aligned on a full word boundary and is initialized to binary zeros before the first call. A user-written exit program must provide the code required to manage this work area.

pfattr (Bytes 5–8)

A pointer to the print file attribute data structure. For more information about the format of this data structure and the information presented, see “Attributes of the line data input file” on page 93.

resname (Bytes 9–16)

Specifies the name of the requested resource. The exit program cannot modify or change this value.

restype (Byte 17)

Specifies the type of resource the name refers to. This is a one-byte hexadecimal value where:

- X'03' Specifies a GOCA (graphics) object.
- X'05' Specifies a BCOCA (barcode) object.
- X'06' Specifies an IOCA (IO image) object.
- X'40' Specifies a font character set.
- X'41' Specifies a code page.
- X'FB' Specifies a page segment.
- X'FC' Specifies an overlay.

The line-data transform does not call this exit for these resource types:

Page definition

The page definition (**pagedef** keyword) is a required resource for transforming a line-data file.

Form definition

The form definition (**formdef** keyword) is a required resource for printing a transformed line-data file.

Coded fonts

The line-data transform must process coded fonts to determine the names of the code pages and font character sets they reference. This is necessary in creating Map Coded Font-2 (MCF-2) structured fields.

request (Byte 18)

Specifies how the line-data transform processes the resource. On entry to the exit program, this parameter is X'00'. When the exit program returns control to the line-data transform, this parameter must have the value X'00' or X'01' where:

X'00' Specifies that the line-data transform should process the resource.

X'01' Specifies that the line-data transform should ignore the resource.

A value of X'00' on entry to the exit program specifies that the resource be processed. To ignore the resource, change the request byte value to X'01'. Any value greater than X'01' is interpreted as X'00' and the resource is processed.

eof (Byte 19)

An end-of-file (eof) indicator. This indicator is a one-byte character code that signals when the line-data transform has written the last record.

When eof is signaled (eof value = 'Y'), the last record has already been presented to the resource exit. The pointer **record** is no longer valid. Records cannot be inserted after eof is signaled. These are the only valid values for this parameter:

Y Specifies that the last record has been written.

N Specifies that the last record has not been written.

This end-of-file flag, used as a last-call indicator, returns control to the line-data transform. The exit program cannot change this parameter.

resnamel

The length of the meaningful characters in field resnamf. In **resnamel**, the last character is the letter l.

pad1 A padding byte to place resnamf on a word boundary.

resnamf

An actual name of the resource if it is greater than 8 characters. If the name is 8 characters or less, it is stored in field resname instead.

Non-zero return codes

If the line-data transform receives a non-zero return code from any exit program, the line-data transform issues message 0425-412 and terminates processing.

Attributes of the line data input file

Note: This data structure is provided for informational purposes only.

The line-data transform provides information about the attributes of the line-data input file in a data structure available to the line-data transform user exits. This example shows the format of this data structure.

```
typedef struct_PFATTTR /* Print File Attributes */ /*  
{  
    char    cc[3]; /*Carriage controls? - "YES" or "NO" */ /*
```

```

char      cctype[1]; /*Carriage control type - A(ANSI), M (Machine), Z (ASCII) */
char      chars[20]; /*CHARS values, including commas (eg.. GT12,GT15) */
char      formdef[8]; /*Form Definition (FORMDEF) */
char      pagedef[8]; /*Page Definition (PAGEDEF) */
char      prmode[8]; /*Processing mode */
char      trc[3]; /*Table Reference Characters - "YES" or "NO" */
} PFATTR;

```

The address of the control block containing these parameters is passed to the user exits:

cc (Bytes 1–3)

The value of the **cc** keyword as specified with the **line2afp** command. The line-data transform uses the default value (**yes**) if this keyword is not explicitly specified.

cctype (Byte 4)

The value of the **cctype** keyword as specified with the **line2afp** command. The line-data transform uses the default value (**z**) for ANSI carriage-control characters that are encoded in ASCII, if this keyword is not explicitly specified.

chars (Bytes 5–24)

The value of the **chars** keyword as specified with the **line2afp** command, including any commas that separate multiple font specifications. Because the **chars** keyword has no default value, this field contains blanks if no values are specified.

formdef (Bytes 25–32)

The value of the **formdef** keyword as specified with the **line2afp** command. Because the **formdef** keyword has no default value, this field contains blanks if no value is specified.

pagedef (Bytes 33–40)

The value of the **pagedef** keyword as specified with the **line2afp** command. Because the **pagedef** keyword has no default value, this field contains blanks if no value is specified.

prmode (Bytes 41–48)

The value of the **prmode** keyword as specified with the **line2afp** command. Because the **prmode** keyword has no default value, this field contains blanks if no value is specified.

trc (Bytes 49–51)

The value of the **trc** keyword as specified with the **line2afp** command. The line-data transform uses the default value (**no**) if this keyword is not explicitly specified.

Using the **uconv** command to convert coded character sets

InfoPrint Manager for Windows, Version 2 Release 2, replaced **iconv** with **uconv** and **uconv** is used for Version 2 Release 3 as well for translating text strings. **uconv** also lets you use UTF16 characters for translation.

iconv:

If you have written any line-data user-exit programs that use **iconv**, you need to alter them to use **uconv** instead.

From a Command Prompt window, you can invoke the **uconv** command to convert the encoding of characters read from either standard input or the specified file from one code character set (CCSID) to another and then write the results to standard output (for example to convert ASCII to EBCDIC). This command is useful when the line data coded character sets must be changed so they match the coded character sets for the available font resources for a job. These are often applied for job resources (such as page definitions and form definitions) that have been created on either an AIX or an z/OS[®] operating system and sent to Windows.

For more information about the **uconv** command, see *InfoPrint Manager: Reference*.

Chapter 17. Creating and managing auxiliary sheets and PSF DSS user-exit programs

Besides logical destinations, queues, and actual destinations, the InfoPrint Windows server also controls auxiliary-sheet objects. This section contains information and procedures for creating and configuring these objects.

This section contains these topics:

- “Preparing to work with auxiliary sheets”
- “Creating and configuring auxiliary sheet objects” on page 105
- “Using Interrupt Message Pages” on page 107

Preparing to work with auxiliary sheets

These topics describe auxiliary-sheet terms, default auxiliary sheets, and PSF DSS user-exit programs supplied by InfoPrint Manager, and provides examples of printed auxiliary sheets:

- “Terms relating to auxiliary sheets”
- “InfoPrint default auxiliary-sheet objects” on page 98
- “Sequence of user-exit programs” on page 103
- “Directory locations of user-exit programs supplied with InfoPrint Manager” on page 103

Terms relating to auxiliary sheets

To understand auxiliary sheets and how InfoPrint Manager generates the information that appears on them, you need to understand these terms:

Auxiliary sheet

Represents a particular sheet of paper, blank or otherwise, that can precede a job, separate copies of a job, or follow a job. PSF printers print auxiliary sheets. Both Internet Print Protocol (IPP) and Passthrough printers also print auxiliary sheets, but they do not use auxiliary sheet objects to activate this support.

Auxiliary-sheet object

Represents a single user-exit program that you can specify for InfoPrint PSF printers. User-exit programs process information that can be printed on an auxiliary sheet or recorded in an accounting or audit log. Both the actual destination (PSF printer) and the auxiliary-sheet objects must reside in the same InfoPrint server.

Some auxiliary sheet objects supplied with InfoPrint Manager generate a file that you can use with an executable reporting utility to view job statistics. see Chapter 18, “Gathering accounting and audit data about print jobs,” on page 111 for more information about viewing statistics.

Auxiliary-sheet object name

Identifies the auxiliary sheet object. The names of some of the default auxiliary sheets indicate the style of the auxiliary sheet: **brief**, **full**, or **blank**.

User exit

A point during print processing when you can tell InfoPrint Manager to

run a user-exit program, then return control of processing to InfoPrint Manager after the user-exit program ends. InfoPrint Manager provides data at each exit point that can serve as input to the user-exit program. InfoPrint Manager can use the output from the user-exit program for InfoPrint Manager processing; for example, a user-exit program can pass instructions about how to format a start sheet to InfoPrint Manager. InfoPrint Manager provides user exits for these types of auxiliary sheets:

- Start sheet
- End sheet
- Separator sheet
- Accounting log
- Accounting sheet
- Audit log
- Audit sheet
- Input data stream
- Output data stream
- Post-print accounting (log file only)

User-exit program

Defines the data that prints and creates the format of the auxiliary sheet style. InfoPrint Manager extends its function by providing user-exit programs that you can use to format start, end, or separator sheets for the job. Also, InfoPrint Manager user-exit programs allow you to track accounting and audit information, as well as extract information about the incoming and outgoing job data streams.

Form definition

Defines the characteristics of the form or printed media, which include: overlays used, the paper source (for cut-sheet printers), duplex printing, text suppression, and the position of composed-text data on the form.

For more information about both form definitions, see the *InfoPrint Manager: Reference*.

Edge marks

Marks that print at the edges of auxiliary sheets and help to identify job boundaries in printed output.

Interrupt Message Pages

Interrupt Message Pages (IMPs) are pages that are similar to the message pages that print at the end of a print job, but IMPs are printed at the point of an error where a possible data loss has occurred. See “Using Interrupt Message Pages” on page 107 for more information.

InfoPrint default auxiliary-sheet objects

InfoPrint Manager provides default auxiliary-sheet objects, which it creates when you first create a server. InfoPrint Manager automatically identifies these as supported values for PSF actual destinations. The default auxiliary-sheet objects with their associated user-exit programs and form definitions are shown in Table 8 on page 99.

Table 8. Default auxiliary sheet objects

| Auxiliary sheet object | Form definition | Description | User exit program | Additional Information |
|------------------------|-----------------|---|---------------------|--|
| none | n/a | InfoPrint generates no auxiliary sheet. | n/a | n/a |
| brief | F1A10110 | Start sheet | ainuxhdr | |
| | | Separator sheet | ainuxsep | |
| | | End sheet | ainuxtlr | |
| | | Accounting exit | ainuxacc | |
| | | Audit exit | ainuxaud | |
| full | F1A10110 | Start sheet | ainuxhdr2 | |
| | | Separator sheet | ainuxsep2 | |
| | | End sheet | ainuxtlr2 | |
| | | Accounting exit | ainuxacc2 | |
| | | Audit exit | ainuxaud2 | |
| blank | F1A10110 | Start sheet | pduxblkh | Blank sheet of paper |
| | | Separator sheet | pduxblks | |
| | | End sheet | pduxblkt | |
| accounting-log | n/a | Accounting exit | ainacclog | Writes accounting information to the <i>install_path \var\psf\accounting.log</i> file. Does not produce a printed sheet. |
| | | Audit exit | ainaudlog | Writes audit information to the <i>install_path \var\psf\audit.log</i> file. Does not produce a printed sheet. |
| | | Post-print accounting exit | ainuxjob completion | Writes post-print accounting information to the <i>install_path \var\psf\jobcompletion.log</i> file if the auxiliary sheet object's psf-post-print-accounting-program-name is set to ainuxjobcompletion. Does not produce a printed sheet. |
| job-ticket | n/a | Start sheet | ainuxhdrp | |
| | | Separator sheet | ainuxsepp | |
| | | End sheet | ainuxtlrp | |
| | | Accounting exit | ainuxaccp | Writes accounting information to the <i>install_path \var\psf\podaccount.log</i> Does not produce a printed sheet. |
| | | Audit exit | ainuxaudp | |

Table 8. Default auxiliary sheet objects (continued)

| Auxiliary sheet object | Form definition | Description | User exit program | Additional Information |
|------------------------|-----------------|-----------------|-------------------|------------------------|
| 64xx | F1A10110 | Start sheet | ainuxhdrx | |
| | | Separator sheet | ainuxsepX | |
| | | End sheet | ainuxtlrx | |

You can create your own auxiliary-sheet objects using the InfoPrint **pdcreate** command from a Command Prompt window. see “Creating new auxiliary-sheet objects using the pdcreate command” on page 105.

Examples of Brief-Style and Full-Style Auxiliary Sheets

These examples of auxiliary-sheet printouts were produced using the InfoPrint **brief** and **full** default auxiliary-sheet objects.

Start Sheet Examples: In Figure 5, the user-exit program **ainuxhdr** generated the brief style of the start sheet and user-exit program **ainuxhdr2** generated the full style of the start sheet.



Figure 5. Brief and Full Styles of Start Sheets

Separator Sheet Examples: In Figure 6 on page 101, the user-exit program **ainuxsep** generated the brief style of the separator sheet and user-exit program **ainuxsep2** generated the full style of the separator sheet.

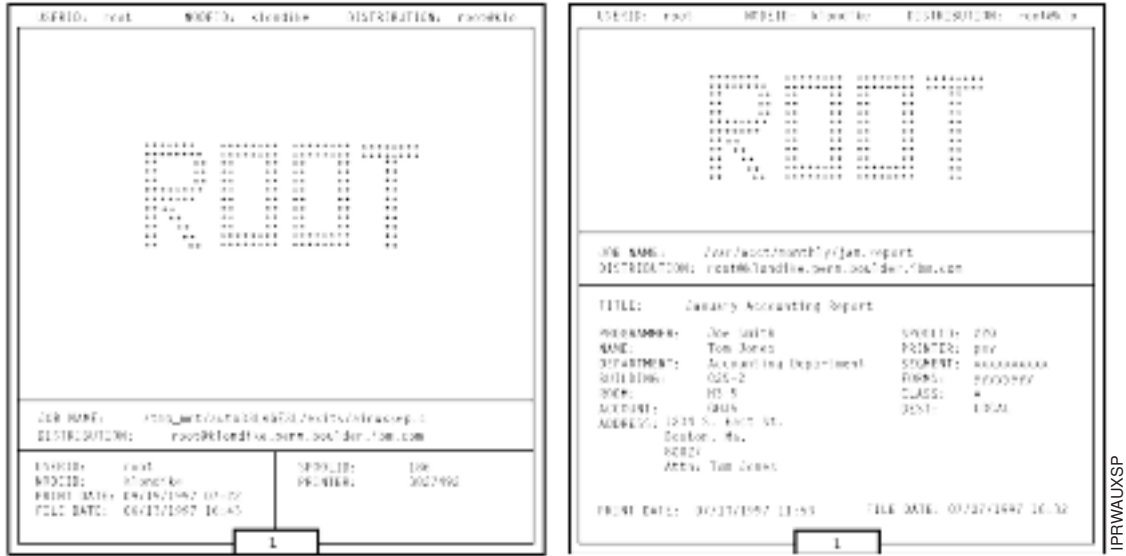


Figure 6. Brief and Full Styles of Separator Sheets

End Sheet Examples: In Figure 7, the user-exit program **ainuxtlr** generated the brief style of the end sheet and user-exit program **ainuxtlr2** generated the full style of the end sheet.

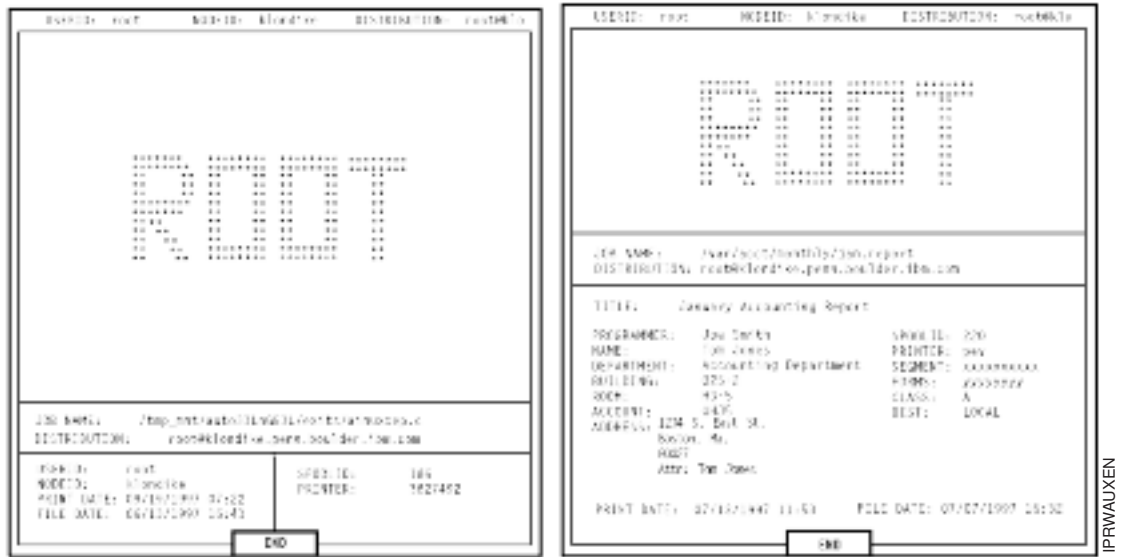


Figure 7. Brief and Full Styles of End Sheets

Accounting Sheet Examples: In Figure 8 on page 102, the user-exit program **ainuxacc** generated the brief style of the accounting-log sheet and user-exit program **ainuxacc2** generated the full style of the accounting-log sheet.



Figure 8. Brief and Full Styles of Accounting-Log Sheets

Audit Sheet Examples: In Figure 9 on page 103, the user-exit program **ainuxaud** generated the brief style of the audit sheet and the user-exit program **ainuxaud2** generated the full style of the audit sheet.

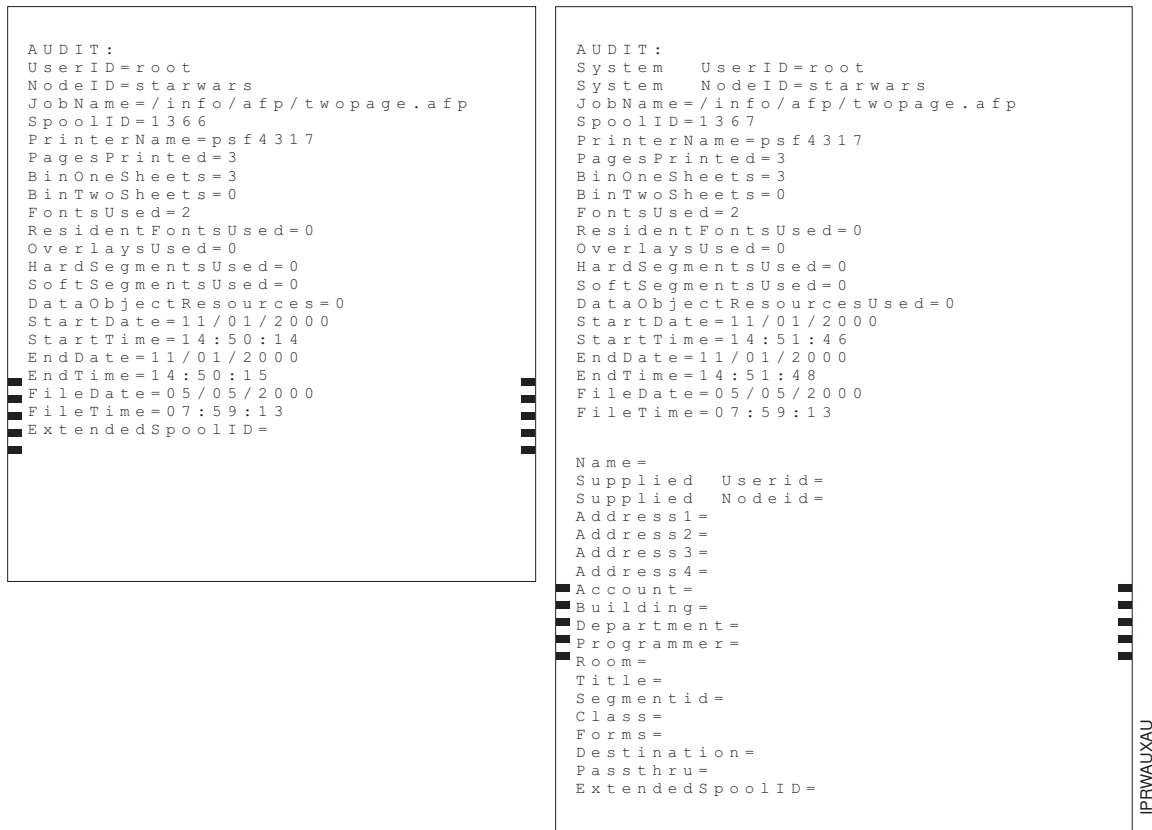


Figure 9. Brief and Full Styles of Audit Sheets

Sequence of user-exit programs

This figure shows the order in which InfoPrint calls the user-exit programs during job processing on a printer. You cannot change this order.

Note: Separator sheets are printed only between copies of a job, not between documents in a job.

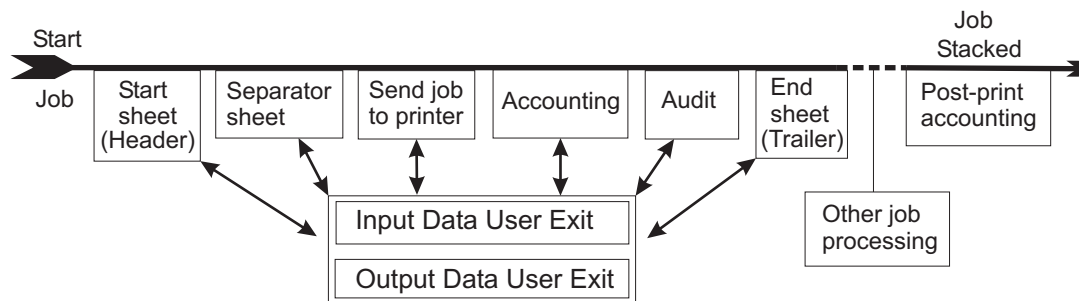


Figure 10. InfoPrint Manager user-exit program order at the printer

Directory locations of user-exit programs supplied with InfoPrint Manager

When you create the auxiliary-sheet object, you specify the name of the user-exit program and other options, such as the form definition and whether the program

produces printed output. You identify which auxiliary-sheet objects you want associated with each actual destination using the GUI attributes notebook for each actual destination. InfoPrint Manager runs the referenced user-exit programs when you submit a job to that printer.

Table 9. Locations of InfoPrint Manager user exits

| Program | Description |
|--|---|
| <i>Start Sheets</i> | |
| <i>install_path\bin\pduxblkh.dll</i> | Prints a blank start sheet. |
| <i>install_path\bin\ainuxhdr.dll</i> | Prints a brief-style start sheet. |
| <i>install_path\bin\ainuxhdr2.dll</i> | Prints a full-style start sheet. |
| <i>install_path\bin\ainuxhdrp.dll</i> | Prints job ticket information about the start sheet. |
| <i>install_path\lpp\psf\bin\ainuxhdrx.dll</i> | Prints a start sheet without vertical lines for InfoPrint 6400 and 6500 model printers. |
| <i>Separator Sheets</i> | |
| <i>install_path\bin\pduxblks.dll</i> | Prints a blank separator sheet. |
| <i>install_path\bin\ainuxsep.dll</i> | Prints a brief-style separator sheet. |
| <i>install_path\bin\ainuxsep2.dll</i> | Prints a full-style separator sheet. |
| <i>install_path\bin\ainuxsepp.dll</i> | Prints job ticket information on the separator sheet. |
| <i>install_path\lpp\psf\bin\ainuxsepx.dll</i> | Prints a separator sheet without vertical lines for InfoPrint 6400 and 6500 model printers. |
| <i>End Sheets</i> | |
| <i>install_path\bin\pduxblks.dll</i> | Prints a blank end sheet. |
| <i>install_path\bin\ainuxtlr.dll</i> | Prints a brief-style end sheet. |
| <i>install_path\bin\ainuxtlr2.dll</i> | Prints a full-style end sheet. |
| <i>install_path\bin\ainuxtlrp.dll</i> | Prints job ticket information on the end sheet. |
| <i>install_path\lpp\psf\bin\ainuxtlrx.dll</i> | Prints an end sheet without vertical lines for InfoPrint 6400 and 6500 model printers. |
| <i>Accounting</i> | |
| <i>install_path\bin\ainuxacc.dll</i> | Prints a brief-style accounting sheet. |
| <i>install_path\bin\ainuxacc2.dll</i> | Prints a full-style accounting sheet. |
| <i>install_path\bin\ainuxaccp.dll</i> | Writes accounting information to <i>install_path\var\psf\podaccount.log</i> . |
| <i>install_path\bin\ainacclog.dll</i> | Writes accounting information to <i>install_path\var\psf\accounting.log</i> . |
| <i>Post-print Accounting</i> | |
| <i>install_path\bin\ainuxjobcompletion.dll</i> | Writes accounting information to <i>install_path\var\psf\jobcompletion.log</i> |
| <i>Audit</i> | |
| <i>install_path\bin\ainuxaud.dll</i> | Prints a brief-style audit sheet. |
| <i>install_path\bin\ainuxaud2.dll</i> | Prints a full-style audit sheet. |
| <i>install_path\bin\ainuxaudp.dll</i> | Prints job ticket information on the audit sheet. |

Table 9. Locations of InfoPrint Manager user exits (continued)

| Program | Description |
|---------------------------------------|--|
| <i>install_path\bin\ainaudlog.dll</i> | Writes audit information to <i>install_path\var\psf\audit.log</i> . |
| <i>Input Data</i> | |
| <i>install_path\bin\ainuxind.dll</i> | Performs no tasks; use it as a model for writing your own user-exit program. |
| <i>Output Data</i> | |
| <i>install_path\bin\ainuxout.dll</i> | Performs no tasks; use it as a model for writing your own user-exit program. |

In addition, you can use the source code of the sample user-exit programs to write your own user-exit programs. InfoPrint Manager provides the source code for all of these exits in the *install_path\exits\psf* directory.

Creating and configuring auxiliary sheet objects

When you first create a server, InfoPrint creates the default auxiliary-sheet objects described in “InfoPrint default auxiliary-sheet objects” on page 98.

These topics describe how you can create and configure auxiliary-sheet objects:

- “Creating new auxiliary-sheet objects using the `pdcreate` command”
- “Associating auxiliary-sheet objects with PSF printers” on page 106
- “Activating auxiliary sheets for accounting or audit information” on page 106
- “Associating the post-print accounting user-exit program with an actual destination” on page 106
- “Associating an input data user-exit program with an actual destination” on page 107
- “Associating an output data user-exit program with an actual destination” on page 107

Creating new auxiliary-sheet objects using the `pdcreate` command

You create auxiliary-sheet objects from the **Command Prompt** window; you cannot create them through the InfoPrint administrator’s GUI. Use the `pdcreate` command with the `-c auxiliary-sheet` flag and specify the server name and an auxiliary-sheet object name to create a new auxiliary-sheet object. Specify a name that uniquely identifies the auxiliary-sheet object in the server. Different servers can contain a auxiliary-sheet objects with the same name, but possibly with different values for their attributes.

You also specify the `psf-exit-form-definition`, `psf-exit-page-mark`, and `psf-exit-program-name` attributes with the command to specify the form definition, whether edge marks print, and the user-exit program used.

For example, to create an auxiliary-sheet object named `custom-start` contained in `Server1` that specifies the `ainuxhdr` user-exit program, the `F1A10110` form definition, and includes edge marks, enter the command:

```
pdcreate -c auxiliary-sheet -x "psf-exit-program-name=ainuxhdr
psf-exit-form-definition=F1A10110 psf-exit-page-mark=true"
Server1:custom-start
```

Associating auxiliary-sheet objects with PSF printers

Use the **InfoPrint Manager Administration GUI** to associate auxiliary sheet objects with PSF printers. Start the GUI and select the printer that you want to associate with an auxiliary sheet. Then, click **Printer → Properties** to open the **Printer Properties** notebook. To complete this task, see the online help in the **InfoPrint Manager Administration GUI**, starting with the topic *Using auxiliary-sheet objects*.

Activating auxiliary sheets for accounting or audit information

You can use the **InfoPrint Manager Administration GUI** to specify auxiliary sheet objects to collect accounting and audit information about jobs processed (as opposed to printed) by a selected PSF printer. Start the GUI and select the printer that you want to associate with an auxiliary sheet. Then, click **Printer → Properties** to open the **Printer Properties** notebook. To complete this task, see the online help in the **InfoPrint Manager Administration GUI**, starting with the topic *Using auxiliary-sheet objects*.

To activate the accounting user-exit program, specify one of the accounting user-exit programs names as the value for the `psf-exit-program-name` (for example, `psf-exit-program-name=ainacclog`) in the auxiliary sheet object associated with the destination. To activate the audit user-exit program, specify one of the audit user-exit program names as the value for the `psf-exit-program-name` (for example, `psf-exit-program-name=ainaudlog`) in the auxiliary sheet object associated with the destination.

Each PSF actual destination can have one, both, or neither of the two accounting methods (accounting and post-print accounting) active. If the accounting setup is intended to be the same for all PSF printers, this can all be done with one auxiliary sheet object, which can either be one you have created or the default `accounting-log` auxiliary sheet object supplied by InfoPrint.

Associating the post-print accounting user-exit program with an actual destination

Use the **InfoPrint Manager Administration GUI** to specify auxiliary sheets to collect post-print accounting information about jobs processed by a selected PSF printer. Start the GUI and select the printer that you want to associate with an auxiliary sheet. Then, click **Printer → Properties** to open the **Printer Properties** notebook. To complete this task, see the online help in the **InfoPrint Manager Administration GUI**, starting with the topic *Using auxiliary-sheet objects*. Then set the attribute of the auxiliary sheet object using the command shown in “Activating the user-exit program” on page 74.

To activate the post-print accounting exit program, specify `psf-post-print-accounting-program-name=ainuxjobcompletion` in the auxiliary sheet object associated with the destination.

Each PSF printer actual destination can have one, both, or neither of the two accounting methods (accounting and post-print accounting) active. If the accounting setup is intended to be the same for all PSF printers, this can all be

done with one auxiliary sheet object, which can either be one you have created or the default accounting-log auxiliary sheet object supplied by InfoPrint.

Associating an input data user-exit program with an actual destination

You can use the input data user-exit program to monitor the contents of the data stream coming into InfoPrint Manager from the **InfoPrint Manager Administration GUI**. Start the GUI and select the printer that you want to associate with an auxiliary sheet. Then, click **Printer → Properties** to open the **Printer Properties** notebook. To complete this task, see the online help in the **InfoPrint Manager Administration GUI**, starting with the topic *Using auxiliary-sheet objects*.

Associating an output data user-exit program with an actual destination

You can use the output data user-exit program to monitor the contents of the data stream created by InfoPrint from the **InfoPrint Manager Administration GUI**. Start the GUI and select the printer that you want to associate with an auxiliary sheet. Then, click **Printer → Properties** to open the **Printer Properties** notebook. To complete this task, see the online help in the **InfoPrint Manager Administration GUI**, starting with the topic *Using auxiliary-sheet objects*.

Using Interrupt Message Pages

Interrupt Message Pages (IMPs) provide a way for printer operators to find the cause and location of a printing problem. IMPs are pages that are similar to the message pages that print at the end of a print job, but IMPs are printed at the point of an error where a possible data loss has occurred. This allows the operators to make sure that no data is missing or to compensate for issues during the post-processing phase of the print job.

IMPs are for use with PSF TCP/IP. They are associated with an Actual Destination (AD), and cannot be changed for each job.

IMPs and finishing processes are incompatible and we do not recommend combining these functions.

| Scenario/Condition | Produce interrupt message page? |
|--|---------------------------------|
| Pause job | Yes |
| Resume job | Yes |
| Pause printer | No |
| Resume printer | No |
| AD shutdown - <i>Synchronous</i> (same as pause job) | Yes |
| AD shutdown - <i>Now</i> (stop as soon as possible) | No |
| NACKs ¹ | On an action code basis |

| Scenario/Condition | Produce interrupt message page? |
|--|---|
| <u>Forward Spacing</u> | Yes |
| - Normal in-job forward space | No |
| - before NPRO ² | Yes |
| - after NPRO | No |
| - Forward space with no pages committed | Yes |
| - Forward past the end of the job | No |
| - before NPRO | Yes |
| - after NPRO | |
| <u>Back Spacing</u> | Yes |
| - Normal in job back space | No |
| - before NPRO | Yes |
| - after NPRO | No |
| - Back space with no pages committed | Yes |
| - Back space to the beginning | No |
| - before NPRO | Yes |
| - after NPRO | |
| Print a page range | No |
| Cancel job | Yes |
| - pdrm/pddelete | Covered under NACK |
| - cancel button on printer | |
| Communication lost | No |
| Stop button on the printer | No - on ready/not ready (other conditions fall under NACKs) |
| Add new IMP messages to the final message page | Yes |
| Add messages to the IMP | Yes |
| Print messages in currently supported NLS language | Yes |
| 1 negative acknowledgement2 non-process run out | |

Activating IMPs

Follow this procedure to enable a printer to produce IMPs:

1. Open the **InfoPrint Manager Administration GUI**.
2. Right-click on the printer that you want to enable and select **Properties**. The properties notebook will open for that printer.
3. Click **Auxiliary/Separator Sheets**.
4. Click **Yes** next to **Activate interrupt message page**.
5. To use a form definition that is different than the default, enter the name of the definition in the **Interrupt message page form definition** entry field.
6. To use page marks, click **Yes** next to **Interrupt message page mark form**. The **Interrupt message page mark form** setting prints a mark on the edge of the forms so that the mark is visible in a stack of paper when viewed from the side. Continuous forms printers that are folding the forms will print the mark where the fold in the pages occurs.

IMPs have a default message page form definition that is already assigned and is designed to print on all paper sizes. This form definition is named **F1MG0110**, and has these default settings:

- One copy
- No overlay

- Use paper from bin 1

There is also a new form definition named **F1MGIMP** that is identical to the default form definition, except that it specifies offset stacking.

You can create your own form definition, but be aware that doing so might alter the ability of your form definition to print on all paper sizes. To create a form definition, you must use the InfoPrint Page Printer Formatting Aid (PPFA) feature. See the *InfoPrint Page Printer Formatting Aid: User's Guide*, S544–5284, and the *InfoPrint Page Printer Formatting Aid: Command Quick Reference*, G544–3701, for more information.

If you are creating your own form definition and wish to use offset stacking, you can use PPFA and specify **JOG YES** in the form definition.

Chapter 18. Gathering accounting and audit data about print jobs

InfoPrint Manager for Windows lets you gather accounting information about print jobs from two sources:

- The InfoPrint Manager server (applies to all destination support systems (DSSs)). For more information, see Working with InfoPrint Manager Accounting Information.

You should use accounting information from the InfoPrint Manager if you:

- need to track accounting information for all types of InfoPrint DSSs.
- want to take advantage of the **pdaccount** command to summarize data in a spread sheet program.

- The PSF audit, accounting, and post-print accounting user-exit programs (applies only to the PSF DSSs). For more information, see Working with PSF Accounting and Audit User-Exit Programs.

You should use information from these PSF audit and accounting user-exit programs if you:

- use only PSF attached printers.
- need more detailed information than that provided by the **pdaccount** command.

Working with InfoPrint Manager server accounting information

While all DSSs can store accounting information about the jobs processed, the information from some DSSs is more accurate than the information from others. All actual destination accounting logs are enabled through the server and actual destination **log-accounting-data** attribute. When you specify **log-accounting-data=true**, InfoPrint stores data into server accounting logs (one for each destination), which you can either view directly through your editor of choice (such as Notepad) from the command-line or by specifying the **pdaccount** command. The **pdaccount** command lets you obtain summary information in a comma-delimited format (`Printer1,12997,1989787763`). This information can be saved in a file, which can be imported into a spread sheet to calculate the cost of consumables, the usage rate of printers, or the cost of printing by individual user. The summary information includes both the total pages and total octets (the number of bytes) printed, either by destination or by user as requested for a specified time period. You can also obtain the complete accounting records (information for all print jobs) for a specified time period, instead of the summary data.

How does the **pdaccount** command collect InfoPrint Manager accounting information?

To activate InfoPrint Manager account log support, you must change the **log-accounting-data** value. By default, the InfoPrint Manager value is **log-accounting-data=false**, and the actual destination default is to use the server setting. As a result, you must **log-accounting-data** attribute as follows:

- To activate accounting for all destinations on a server:
 - set the server's **log-accounting-data** attribute to **True** (if an actual destination hasn't specified this attribute, the server's **log-accounting-data** attribute is used).

- To activate accounting for a specific actual destination:
set the **log-accounting-data** attribute to **True** for that specific actual destination. If you have not set an actual destination, the value of the **log-accounting-data** attribute for the server is used.
- To deactivate accounting for all destinations on a server, :
set the **log-accounting-data** attribute to **False** . If an actual destination hasn't specified this attribute, the server's **log-accounting-data** attribute is used.
- To deactivate accounting for a specific actual destination:
set the **log-accounting-data** attribute to **False** for that specific actual destination. If an actual destination hasn't specified this attribute, the server's **log-accounting-data** attribute is used.

You can change the **log-accounting-data** attribute with either a **pdset** command or the InfoPrint Manager Administration GUI. For more information about the InfoPrint Manager Administration GUI, see: "Using the InfoPrint Interfaces" in the *InfoPrint Manager for Windows: Getting Started*.

The **pdaccount** command obtains these accounting information from one or more InfoPrint Manager servers:

- **actual destination name**
- **job owner**
- **global job-id**
- **submission time**
- **completion time**
- **pages-completed**
- **octets-completed**
- **data stream**
- **job name**

Note: You only get all these accounting options if you specify **pdaccount -t all** on the command line.

To request summary information grouped by destinations on an InfoPrint Manager server named Server1 from 8 AM 9/20/99 to 8 AM 9/27/99, specify this from either the Windows **Command prompt** or **MS-DOS prompt** window:

```
pdaccount -t destination -s '08:00:00 09/20/99' -e '08:00:00 09/27/99'
Server1
```

InfoPrint displays the information in a format similar to this:

```
Destination Name,Pages Completed,Octets Completed
Printer1,12997,1989787763
Printer2,2455,17676836
Printer3,86673,189808083
```

where Printer1 specifies the actual destination, 12997 indicates the pages completed, and 1989787763 indicates the octets completed within the specified start and end times (in this example, one week).

For more information about using the **pdaccount** command, see *InfoPrint Manager: Reference*.

How do you manage the InfoPrint Manager accounting logs?

Once you specify `log-accounting-data=true` on either an InfoPrint Manager server or an actual destination, these accounting logs start growing without bound. As part of your scheduled system maintenance, the accounting logs should be managed carefully to avoid potential performance problems. Periodically, the log files must be either deleted or moved to a different folder. If you do not do either of these tasks, your server will run out of space on the disk drive, preventing you from printing any more jobs.

The Windows accounting logs are in a subfolder of the server's folder. This describes the subdirectory where the files are located in:

```
install_path\var\pd\accounting.logs
```

InfoPrint Manager for Windows provides one accounting log for each destination, named *actual_destination_name*.**accounting.log.v1**, where *actual_destination_name* specifies the actual destination where the job is processed.

To save a record of InfoPrint Manager server accounting data, you need to move the existing log files to a new drive. Be sure that these logs are not being written to, then use this procedure:

1. Create a new directory in the location where you want to archive the existing (**prt1.accounting.log.v1**) log file by moving to that location on your system (from the command line prompt, specify `E:`, then `cd \ntserver`).

To create the new directory, type: `mkdir 3qrt2001logs`

2. Go back to your **C** drive to the folder where the log file is located in. Then access that location, for example **prt1.accounting.log.v1** on **server1**, by specifying:

```
cd install_path\var\pd\accounting.logs
```

3. Copy the **prt1.accounting.log.v1** file to a new directory on a different drive (**E** for this example) named **3qrt2001** by specifying:

```
copy prt1.accounting.log.v1 E:\ntserver\3qrt2001logs\
```

This command copies the existing file to the new directory.

4. Remove the original **prt1.accounting.log.v1** file from the *install_path*\var\pd**accounting.logs** folder:

```
del prt1.accounting.log.v1
```

When the next job is processed on **prt1**, InfoPrint creates a new **prt1.accounting.log.v1** file.

We recommend that you move the data to another disk drive rather than deleting it from the system. This lets you store accounting data and delete it from the system when you no longer need to refer to it. To delete the **prt1.accounting.log.v1** file,

1. Specify `cd install_path\var\pd\accounting.logs`
This command moves you into the correct path.

2. Enter

```
del prt1.accounting.log.v1
```

When the MS-DOS command-line prompt returns, you know that the **prt1.accounting.log.v1** file has been deleted from the system.

3. Enter

```
dir
```

This command displays the contents of your directory for you to verify that the file has been deleted. When the next job is submitted for printing to that actual destination, InfoPrint creates a new **prt1.accounting.log.v1** file and writes the data into that file.

The **pdaccount** command only finds and processes the information in the log files in the original location. Once you move or rename the files, you cannot use the **pdaccount** command to summarize the data. You might want to use the **pdaccount** command to find and process the information and summarize it, store the summaries in a different location, and then delete the logs.

Attention: Requesting information for **all** accounting records can consume a lot of the server's memory since all the data is read into memory to be sent to you. If you have a lot of data to retrieve, you should consider requesting it for smaller time periods and concatenating the returned data.

For example, to retrieve all the accounting records for a one month period, you could issue four **pdaccount** commands like this:

- `pdaccount -t all -s '00:00:00 03/01/00' -e '00:00:00 03/08/00' Server A >March1.accting.data`
- `pdaccount -t all -s '00:00:00 03/08/00' -e '00:00:00 03/15/00' Server A >March2.accting.data`
- `pdaccount -t all -s '00:00:00 03/15/00' -e '00:00:00 03/22/00' Server A >March3.accting.data`
- `pdaccount -t all -s '00:00:00 03/22/00' -e '00:00:00 03/31/00' Server A >March4.accting.data`

Usage considerations by DSS for accounting information

This section contains more information about server accounting information by DSS. It also gives suggestions for working with the various DSSs when using the accounting information in InfoPrint Manager.

In general, InfoPrint Manager logs jobs that complete or are paused, cancelled, or are cleaned while being processed by the actual destination. InfoPrint Manager **does not** log jobs that are not completed but are put back into the queue because the printer is shutdown when a printer problem is encountered.

PSF DSS with TCP/IP attachment type

- On jobs that complete successfully, the page count shown in the accounting log is the number of AFP pages stacked on the printer, including start pages, separator pages, and end pages.

Note: For n-up documents, up to *n* pages are counted for each sheet-side that prints.

- **Limitations:**
 - When printing a multiple-document job in which all the documents are ASCII, the accounting log only shows pages for the last document printed.
 - If a job is paused or cancelled, the page count shown in the accounting log might not be accurate.
 - On paused jobs, the octet count is always zero (0).
 - The number of Intelligent Printer Data Stream™ (IPDS) pages printed is based upon the number of **begin-page** and **end-page** structured

field pairs in the data. As a result, a **2-up** document printed duplex could provide a page count of four for a single sheet of paper.

PSF DSS with Other-Driver attachment type

- If you are using the IBM TCP/IP Port Monitor or the InfoPrint TCP/IP Network Port Monitor and the job completes successfully, then the page count shown in the accounting log is the number pages stacked at the printer. For example, a three-page document printed simplex records three pages in the accounting log and three pages stacked; a four-page document printed duplex reports four pages in the accounting log even through only 2 sheets are stacked.
A duplexed four-page job with a header sheet provides a page count of four, because the auxiliary sheets are not included in the count, but both sides of each page are counted.
- If you are not using the IBM TCP/IP Port Monitor or the InfoPrint TCP/IP Network Port Monitor, the page count is not based on the number of pages stacked on the printer. Instead, the page count recorded in the accounting log is the number of pages PSF reports it has sent to the printer driver, including start pages, separator pages, and end pages.
- If you have set the **document-formats-ripped-at-destination** actual destination attribute for a PSF DSS with Other-Driver attachment type actual destination, the accounting is handled as if it had been submitted to a Passthrough DSS actual destination.
- **Limitations:** The page count and octet count reported in the accounting log for cancelled and paused jobs is not accurate.

PSF DSS with Command attachment type

The page count recorded in the accounting log for destinations using the command is the number of pages PSF generates and sends to the printer. It is not based on the number of pages received or printed by the printer. The page count does include start pages, separator pages, and end pages.

BSD DSS

The page count recorded in the accounting log for destinations using the BSD DSS is based on the these criteria:

- If the user specifies a **job-page-count** job attribute or a **page-count** document attribute with the print job, InfoPrint Manager records that number in the accounting log.
- If the user has not specified **job-page-count** or **page-count**, and the data being printed is PCL or PostScript, InfoPrint Manager attempts to calculate the page count and records the calculated page count in the accounting log.

Internet Printing Protocol (IPP) DSS

The page count recorded in the accounting log for destinations using the IPP DSS is based on these criteria:

- Depending upon the capabilities of the your particular IPP printer, if the printer reports pages completed information through the Internet Printing Protocol and the job completes successfully, that information is used. The auxiliary sheet is not added to the count.
- If the user specifies a **job-page-count** job attribute or a **page-count** document attribute with the print job, InfoPrint Manager records that number in the accounting log. The auxiliary sheet is not added to the count.

- If the user has not specified **job-page-count** or **page-count**, and the data being printed is PCL or PostScript, InfoPrint Manager retrieves the page count from the printer, if the particular printer supports that function. The auxiliary sheet is not included in the count.
- **Limitations:** Because all information is obtained through the Internet Printer Protocol, the attributes required for **pages-completed** might not be supported by a particular printer model.

Note: For accurate results with this DSS, make sure that you set the sides default (whether simplex or duplex) in the printer to match the value on the **sides** actual destination attribute.

Passthrough DSS

The page count recorded in the accounting log for destinations using the Windows DSS is based on these criteria:

- If you are using the IBM TCP/IP Port Monitor or the InfoPrint TCP/IP Network Port Monitor and the job completes successfully, then the page count shown in the accounting log is the number pages stacked at the printer. For example, a three-page document printed simplex records three pages in the accounting log and three pages stacked; a four-page document printed duplex reports four pages in the accounting log even through only 2 sheets are stacked. Auxiliary sheets are not included in the count
- If you are using the IBM TCP/IP Port Monitor or the or the InfoPrint TCP/IP Network Port Monitor and the job does not complete successfully, or if you are not using the IBM TCP/IP Port Monitor or the InfoPrint TCP/IP Network Port Monitor and the user specifies a **job-page-count** job attribute or a **page-count** document attribute with the print job, InfoPrint Manager records that number in the accounting log.
A duplexed four-page job with a header sheet provides a page count of four, because neither the auxiliary sheets nor the back sides of each page are included in the count.
- If the user has not specified **job-page-count** or **page-count**, and the data being printed is PCL or PostScript, InfoPrint Manager attempts to calculate the page count and records the calculated page count in the accounting log. The auxiliary sheet is not included in the count.

Note: For accurate results with this DSS, make sure that you set the sides default (whether simplex or duplex) in the printer to match the value on the **sides** actual destination attribute.

Working with PSF accounting, post-print accounting, and audit data about the job

The accounting, post-print accounting, and audit PSF DSS user-exit programs record data about jobs. For each job printed, InfoPrint Manager activates the PSF DSS accounting and audit user-exit programs before processing the print job's trailer page. InfoPrint Manager activates the PSF DSS post-print accounting user-exit program when the job stacks. More than one InfoPrint actual destination can use the same user-exit program to write into the same log file.

This section contains these topics:

- “What do the accounting, post-print accounting, and audit PSF DSS user exits provide?”
- “How do you format accounting, post-print accounting, and audit data for viewing?” on page 119
- “How do you manage the contents of the data files?” on page 119

What do the accounting, post-print accounting, and audit PSF DSS user exits provide?

The accounting and audit PSF DSS user-exit programs record statistical data on jobs processed by InfoPrint Manager actual destinations. This table shows the most common accounting and audit user-exit programs, the files where they record data, and the types of data that they record.

| Program | Log File | Records |
|--|--|---|
| <i>install_path</i> \ bin\ainuxaccp | <i>install_path</i> \var\psf\ podaccount.log | Job submitter, job ID, actual destination, submission machine (nodeid), pages processed (projected), sheets from bin 1, sheets from bin 2, end time, start date, start time, copies per job |
| <i>install_path</i> \ bin\ainacclog | <i>install_path</i> \var\psf\ accounting.log | Job submitter, job name, actual destination, submission machine (nodeid), pages processed (projected), sheets from bin 1, sheets from bin 2, end time, start date, start time, fonts, resident fonts, overlays |
| <i>install_path</i> \ bin\ ainuxjobcompletion | <i>install_path</i> \var\psf\ jobcompletion.log | Job submitter, job ID, job name, spool ID, actual destination, global ID, user pages stacked by tray, user sheets stacked by tray, actual pages stacked by tray, actual sheets stacked by tray, copies requested, fonts and resident fonts used, overlays used, hard and soft segments used, processing start and stop date/time, job completion date/time, file date/time, extended user ID, extended job ID, address, account, building, department, programmer, room, title, job ticket name |
| <i>install_path</i> \ bin\ainaudlog | <i>install_path</i> \var\psf\ audit.log | Job submitter, job name, actual destination, pages per job, pages per actual destination, jobs per output bin, start date, start time, fonts, resident fonts, overlays |

Both *install_path*\ bin\ainacclog and *install_path*\ bin\ainaudlog record the same information in different files. This information is specified in flat ASCII format, with a single line for each job that is processed. You can use this information to determine billing procedures, to assess the workload of different output devices, or to determine how resources are used at your installation.

The **ainuxjobcompletion** exit is called when the printer reports back to InfoPrint Manager that all of the pages for a job have printed. This includes a partial job (due to a data stream error or because the job was paused/cancelled or forward-spaced) and also any extra pages produced as a result of a backspace or

other recovery. For the last job that prints on a continuous forms printer, the exit is not called until an NPRO (non-print run out) is done, either by an operator or automatically by InfoPrint Manager.

Only one record is written for a job that prints, unless a job is paused. In this case, a record is written for the part of the job that was printed up to the pause point; later, if the job is resumed, another record is written for the rest of the job.

Note: If InfoPrint Manager does not receive feedback from the printer that all pages have stacked, such as when the printer is shut down in the middle of a job or when an error such as a server failure occurs, no record is written.

A new procedure has been added to the InfoPrint Manager Administration GUI to show you how to activate the default PSF **ainuxjobcompletion** accounting logs. The **ainuxjobcompletion** accounting exit interface can be used for PSF-driven IPDS printers. It provides actual (versus projected) accounting data and provides additional information about completed print jobs.

Customers who migrate from an existing InfoPrint Manager Version, such as 1.1, to InfoPrint Manager V2.2 will continue to find the previous accounting exit interface intact. Accounting programs that count on the previous accounting interface, which includes the IBM supplied samples, will function without modification.

Customers installing a InfoPrint Manager V2.2 server for the first time will see the post-print accounting exit activated and the accounting data will be written to *install_path\var\psf\jobcompletion.log*.

The intent is to minimize migration issues for existing customers, but to start new customers out with the preferred accounting exit. The default installation for new machines will not activate both accounting exits. However, when V2.2 is installed, both new and migrated customers can choose to have the old, preferred, or both accounting exits active.

If a migrating installation wants to activate the preferred (new) exit, the administrator must set the **psf-post-print-accounting-program-name** auxiliary sheet attribute in the appropriate auxiliary sheet object to provide the name of either the IBM supplied sample exit or a custom version of the preferred exit. The administrator can also choose to deactivate the old exit by resetting the value of the **psf-exit-program-name** auxiliary attribute in the appropriate auxiliary sheet object to **<not set>**.

If a new installation wants to deactivate the preferred exit and instead run the old exit, the administrator must reset the **psf-post-print-accounting-program-name** auxiliary sheet attribute in the appropriate auxiliary sheet object to **<not set>**. The administrator can also choose to activate the old exit by setting the value of the **psf-post-print-accounting-program-name** auxiliary sheet attribute in the appropriate sheet object to the name of either the IBM supplied sample exit or a custom version of the old exit.

In both cases, the administrator can also choose to have both exits active by setting the **psf-exit-program-name** and the **psf-post-print-accounting-program-name** auxiliary sheet attributes to the names of the two accounting programs (old and preferred). The administrator can also choose to deactivate both exits by leaving both attributes unset.

How do you format accounting, post-print accounting, and audit data for viewing?

To view this data, you can use one of these executable reporting utilities that are provided with InfoPrint Manager. These reporting utilities only work if you open a **Command Prompt** window, navigate to the *install_path*\bin directory, and run the program from the command line.

- Accounting utilities

ainupod1

Reports accounting data stored in **podaccount.log** in a summary format (one line per user), sorted by customer ID.

ainupod2

Reports accounting data stored in **podaccount.log**, sorted by job ID.

ainupod3

Reports detailed entries of times and pages printed for each job by the customer ID from **podaccount.log**.

ainurpt1

Reports accounting data stored in **accounting.log**, sorted by actual destination.

ainurpt2

Reports summary accounting data (one line per job submitted) stored in **accounting.log**, sorted by job submitter.

ainurpt3

Reports detailed entries of times and pages printed for a specific job submitter from **accounting.log**.

- Audit utilities

ainurpt4

Reports audit data stored in **audit.log**, sorted by actual destination.

ainurpt5

Reports summary audit data stored in **audit.log**, sorted by job submitter.

ainurpt6

Reports detailed entries of times and pages printed for a specific job submitter from **audit.log**.

- Post-print accounting utilities

ainurpt7

Reports post-print accounting data stored in **jobcompletion.log**, sorted by actual destination.

ainurpt8

Reports summary post-print accounting data stored in **jobcompletion.log**, sorted by job submitter.

ainurpt9

Reports detailed entries of times and pages printed for a specific job submitter in **jobcompletion.log**.

How do you manage the contents of the data files?

An installation with a regular schedule of printing jobs will accumulate accounting, post-print accounting, and audit data that must be managed carefully to avoid potential performance problems. Periodically, the log files must be either purged or

moved to a different folder. If you do not do either of these tasks, your installation might run out of space on the file system, preventing you from printing any more jobs. To avoid this problem, you should purge or move the accounting and audit logs as part of your system maintenance.

We recommend that you move the data to another file system rather than deleting it from the system. That way, you can store accounting data and delete it from the system when you no longer need to refer to it. This procedure describes one way to copy the data to a new location.

1. On your InfoPrint Manager server system, open the Management Console and click **Edit → Service Configuration**.
2. Make note of the directory that is listed in the **Install path** field.
3. Open Windows Explorer and navigate to the *install path*\bin directory.
4. In that directory, find the log file that you need to move, for example, **jobcompletion.log** and select it.
5. With the file selected, click **Edit → Copy**.
6. Navigate to the directory that you want to archive the log file in and select the directory.

Note: This directory might be on a different Windows system than the one you are currently working on.

7. With the directory selected, click **Edit → Paste**.
8. Verify that the log file appears in the new directory.
9. Navigate back to the *install path*\bin directory.
10. In that directory, find the log file that you need to move, for example, **jobcompletion.log** and select it.
11. With the file selected, click **File → Delete**.

To delete the **jobcompletion.log** file without storing the data in another folder, use the procedure above, skipping steps five through ten.

When the next job is submitted for printing, InfoPrint creates a new **jobcompletion.log** file and writes the data into that file.

Chapter 19. Using the InfoPrint Manager line printer daemon (LPD)

The InfoPrint Manager Line Printer Daemon (LPD) is a utility that lets you submit print jobs from other operating systems using a Line Printer (LPR) client. The InfoPrint Manager LPD replaces the LPD that is supplied with the Windows operating system (TCP/IP Print Services); however, it submits the files it receives directly to an InfoPrint destination, not to a Windows printer. It also supports the -o options that are available with some LPR clients (-o options allow you to specify advanced InfoPrint print options, such as formdefs and pagedefs).

Only one LPD can run on your InfoPrint Manager server system at a time. If you have TCP/IP Print Services installed, InfoPrint Manager will disable it and enable the InfoPrint Manager LPD. If you would prefer to use TCP/IP Print Services, use the Management Console to change the service configuration. See the Management Console help for further instructions.

Important: If you have a different LPD installed, InfoPrint Manager will **not** disable it, but will install and start the InfoPrint Manager LPD. You must stop one of the LPDs before you try to submit a print job using an LPR client.

To submit print jobs to the InfoPrint Manager LPD, you can use any LPR client. However, to be able to specify advanced InfoPrint options on the -o flag, you should use the **lprafp** sample code package. **lprafp** is an LPR client that is available as a free download from the InfoPrint Solutions Company Web site. The package includes executable forms of the **lprafp** client for the Windows and AIX (version 4.3.3 and later) platforms. You can compile this code to use it on other platforms as well. InfoPrint Solutions Company does not provide support for the package.

For information about downloading, configuring, and using the **lprafp** sample code package, see “Submitting print jobs through the InfoPrint Manager LPD” on page 308.

Chapter 20. Using the InfoPrint Manager System Migration (ismu) Utility

You use the InfoPrint System Migration (ismu) utility for backing up, restoring, or migrating your InfoPrint Manager environment. This utility is based on the existing server archive functionality, and it backs up your current configuration from a specific level of InfoPrint Manager and restores it on the same or different InfoPrint Manager environment.

Using this utility, you can back up any level of your InfoPrint Manager environment.

When using this utility for restoring purposes, we recommended having the InfoPrint Manager and the backup archive at the same level. If they are not at the same level and you proceed with the restoring or migration process, two warning messages will prompt you that you are not on the same level and the results might be unpredictable. This still enables you to have the backup or restore process ran at slightly different levels (for example x.2.0.255 versus x.2.0.256).

If you need to perform a migration between different levels of InfoPrint Manager, follow these steps:

- Make sure that InfoPrint Manager is at the same level on the backup and target environments
- Perform the backup and restore required operations, as documented in *InfoPrint Manager: Reference*.
- If necessary, upgrade InfoPrint Manager to the required level.

Note:

- The ismu utility must not be used to perform crossover migrations, such as migrating the AIX environment to the Windows environment and backwards. Use this command to backup and restore only similar operating system environments.
- For the Version 2 Release 2 customers convenience, we are delivering the InfoPrint Manager System Migration Utility on the server CDs starting with the next update for Release 2.

Supported operating environments

The ismu utility can run on any of these operating systems:

- Windows 2000 Server SP4
- Windows 2000 Professional SP4
- Windows XP Professional SP2
- Windows Server 2003 Standard Edition SP1
- Windows Server 2003 R2 Standard Edition Service Pack 2
- Windows Server 2003 Enterprise Edition SP2
- Windows Server 2003 R2 Enterprise Edition SP2
- Windows Vista Business
- Windows Vista Enterprise

- Windows Server 2008 Standard Edition SP1

InfoPrint System Migration Utility requires that the minimum level of InfoPrint Manager is Version 2 Release 2. The utility does not support Version 2 Release 1 migrations. The tool will not limit the migration from Version 2 Release 1 but the results might be unpredictable.

Prerequisites

Before using the **ismu** utility, make sure you are aware of these recommendations:

- To run this utility, you must have administrative rights on the system InfoPrint Manager is running.
- The InfoPrint Manager server(s) must be installed and running at all times.
- The InfoPrint Manager target server(s) must not contain any objects.
- To run the **ismu** utility, these programs must be installed on your machine:

zip and **unzip**

- The **ismu utility** also requires IBM Java™ Runtime Environment 1.4.1 or later to be installed on your machine.

Note: You can only run the **ismu** utility locally. This utility does not have network functionality.

Migrating your InfoPrint Manager settings

Before migrating your InfoPrint Manager settings and objects, read the following sections to find out more about what files are automatically backed up and what files are not automatically backed up. For the files and settings that are not automatically backed up, you should use the manual back up procedure.

Automatic process

This section lists the files that will be automatically backed up and restored by the **ismu** utility.

Table 10. Files that the ismu utility automatically backs up and restores

| Files automatically backed up and restored |
|--|
| Custom notification and PSF exits |
| FST security settings |
| PSF Direct configuration |
| Custom or modified halftones. |
| Transform configuration files. |
| Server Admin/Operator GUI configuration/customization. |
| Custom 64xx GRID mapping tables. |
| Custom ICU tables. |
| Custom auxilliary-sheets. |
| Custom LPD parameters mapping tables. |

Automatic tasks during migration

This section details all sections of InfoPrint Manager that are automatically backed up during the migration process.

Custom notification and PSF exits

The program automatically backs up and restores any custom exits and/or PSF exits it finds including these two server exits:

lower-memory-usage-exit

upper-memory-usage-exit

FST security settings

The **ismu** utility automatically backs up and/or restores all the files within the `<install_path>\var\pddir\acl` directory.

PSF Direct configuration

The **ismu** utility copies all the `<install_path>\var\psf\psfdirect*.profile` files from source to the target server.

Custom or modified halftones

The **ismu** utility backs up and/or restores all files from the `<install_path>\psf\config\custom` directory.

Transform configuration files

By default, InfoPrint Manager comes with this transforms: gif2afp, img2afp, jpeg2afp, pcl2afp, ps2afp, tiff2afp and xml2afp. There are two other transforms that are installed separately: afp2pdf and sap2afp. The configuration files for all the transforms are located in `<install_path>\InfoPrint Manager\<transform_name_directory>`, and if you had modified them, then the modified files will be copied onto the new server.

Server Admin/Operator GUI configuration/customization

Copy all the `ipgui_*.cfg` files from `<install_path>\ipgui` directory on the new server.

Custom 64xx GRID mapping tables

Copy all the customized `*.grd` files from `<install_path>\var\psf\<printer_name>`.

Custom ICU tables

Copy all the customized `.cnv` files from `<install_path>\unicode\data\mappings..`

By default it contains 6 cnv files:

- icudt24b_ibm-1388-sap2afp.cnv
- icudt24b_ibm-933-sap2afp.cnv
- icudt24b_ibm-937-sap2afp.cnv

- icudt24b_ibm-939-sap2afp.cnv
- icudt24b_ibm-1399-sap2afp.cnv
- icudt24b_IBM-943C.cnv

If exist, the tool will copy and/or restore all the files from `<install_path>\usr\lpp\psf\afp2pdf\cnv`.

Custom auxilliary-sheets

If the output shows more than the default sheets that come with InfoPrint Manager (64xx, accounting-log, blank, brief, full, job-ticket and none) then the program automatically copies the customized sheets to the new server. Also, the customized user-exits from `<install_path>\usr\lpp\psf\exits\psf` are copied, too.

Manual process

The following list contains parts that the **ismu** utility will not automatically back up and restore.

- Third party applications
- Fast Connect/SAMBA software and configuration for IPDATA and interoperating
- IPPGW configuration
- Channel configuration
- Associated installed products and/or InfoPrintManager features
- IJT and Web Server
- Halftone Management System
- Port monitors
- Registry data about psfin
- Custom fonts paths
- Multi-server environment and credentials (user/password)
- Registries
- MMC "Edit->Service Configuration" checkboxes
- "Communication Ports" MMC registry
- Gateway printer definitions
- DPF and MVS Download settings
- Custom exits for ACIF and MVS Download

Specific tasks during migration

During the migration process, it is very important to make sure that all objects are correctly backed up and your initial configuration is correctly restored. Therefore, these sections list all important areas where you should take additional steps for an accurate migration process.

Fast Connect/SAMBA software and configuration for IPDATA and interoperating

If the source **pdserver** that must be migrated is inter-operated with another server, you must set up the interoperating environment on the new server.

To find more information about this procedure, follow the instructions from *InfoPrint Manager for AIX: Procedures: (G550-1066), Chapter 23 "Configuring InfoPrint*

systems for interoperability" and InfoPrint Manager for Windows: Procedures: (G550-1073) Chapter 22 "Setting up interoperating environments".

If job ticketing is used, you must configure the IPDATA folder. The documentation for this task is found in *"InfoPrint Job Ticketer: Administrator's Guide: (S550-1056)", Chapter 3 "Installation and Configuration" - "Setting up shared file support".*

Channel configuration

The channel configuration is no longer supported. The printers will be created, but they won't start.

Associated installed products and/or InfoPrint Manager features

PPFA

If you have this feature installed, you must install it from the InfoPrint PPFA Feature CD on the new server. If you have customized PPFA source files, you need to copy them to the new server for later processing.

AFP Resource Installer

This is an independent Windows application. You need to make sure that the resources used by the InfoPrint Manager objects are available on the new system.

InfoPrint Job Ticketer and Web Server

If you have InfoPrint Job Ticketer installed on your machine, follow these steps:

1. On the new server, install the InfoPrint Print-on-Demand Feature with Job Ticketer.
2. Copy the `\var\pdjt\JobLibrary` directory from the old server to the new one and also copy the database from `\var\db\ibmdb`
3. Open the Job Ticketer application in the browser and select "Preferences" from the left panel.
4. Make sure that the same settings on the new server (measurement units, submitted jobs to retain and file sharing folder) exist.
5. Click "Print Devices" in the menu and make a list with the print servers, port numbers, and active/inactive status.
6. Add these print servers in InfoPrint Job Ticketer on the new server.

IPPGW configuration

Make sure that the service is started by following these steps:

1. Go to **Control Panel -> Administrative Tools -> Services**.
2. If the service "InfoPrint Manager IPP Gateway" is started, start it on the new server also.

To do this you need to perform these steps:

1. From the Management Console, select **Edit > Service Configuration**.
2. Check the "Automatically start IPP gateway.." box.

3. To verify that the gateway is working open the Internet browser and enter the following web address, replacing serverhostname with the DNS hostname of the system where the IPP gateway daemon is running: `http://serverhostname:631/printers`

Note: IPPGW can be ran only with default port which is **631**.

Halftone Management System

If you have Print-on-Demand feature installed then you have Halftone Management System server running.

Start the Halftone Management System server on the target InfoPrint Manager machine. The configuration does not need to be migrated. The halftones are handled automatically.

Note: If you have HMS on R1, you need to buy the POD licenses, due to the fact that HMS has been moved to the POD feature.

Custom exits for ACIF and MVS Download..

If there are any ACIF exits, you need to copy and restore all the MVS Download exits located in `\bin\mvsdsubm.exe` and `\exits\mvsd` (source files and objects) to the right location on the target server. Also, you need to copy all the ACIF exits located in `\bin\ (apk*.dll, asciinp*.dll and dbblank.dll)` and the source files located in `\exits\acif\` directory.

Windows port monitors

To check if there are Windows port monitors, enter this command:

```
# pdls -c destination -r attachment-type -U <server_name>
```

If there is a destination with **attachment-type=other-driver**, you need to do the following migration steps for the port monitor:

1. Enter this pdls command:

```
# pdls -c destination -r device-name -U <server_name>:<ADname>
```
2. The output will show the name of the port where this DSS sends the data.
3. From **Windows Printers and Faxes**, right click one of the printers, select **Properties**, and then select the **Ports** tab.
4. From the list of ports, you need to locate the one that was returned by the previous **pdls** command. Select it and press the **Configure Port** button. This will provide all the details of the port monitor used (port monitor type, IP address, etc).
5. Install the same port monitor on the target machine and create a port with the same properties identified in Step 4.

Registry data about psfin

1. Open the Management Console.
2. Go to **Options -> Customize Input Manager**.
3. Check if these values are the default ones:
 - Directory for segmet lists: `\var\psf\seglist`
 - Directory for segmets and percent usage threshold: `\var\psf\segments 90`

- Workspace management: automatic
 - Default segment size: 5000
 - Percentage of workspace for retained segments: 5
 - Enable trace: unchecked
4. If the values match the default ones, no work needs to be done; otherwise, you need to modify the defaults on the new server also to match the ones from the source server.

Custom fonts paths

If you use other fonts than the ones shipped with the product, you have to migrate them.

In order to do this, complete these steps:

1. Open the Management Console
2. Go to **Edit -> Service Configuration** .
3. Locate the Default font search path field.
 - If it has a value different than the default one (\fontlib), make sure that the same path is set on the new server, that it exists, and that it contains the same fonts as the one on the original server.
4. If you have set the **resource-context** or **resource-context-font** attributes for any actual destination to point to a custom path, you have to migrate the custom path.
5. If the you have set the above attributes for a default document object, you need to have the path and fonts on the new server, too.
6. To check the values of these attributes, use the following pdls commands:


```
#pdl -c destination -r resource-context <server_name>
#pdl -c initial-value-document -r resource-context <server_name>
#pdl -c destination -r resource-context-font <server_name>
#pdl -c initial-value-document -r resource-context-font <server_name>
```
7. Copy the font folders pointed to by the attributes listed above to the new server. Also, set the Default font search path field in the Management Console to match the one from the original server.

Multi-server environment and credentials (user/password)

The Management Console Registry can be seen by opening the Management Console and selecting **Edit->Service Configuration**. There are 8 paths listed there. The defaults values for them are:

- Install path: C:\Program Files\IBM\InfoPrint Manager
- Base namespace path: C:\Program Files\IBM\InfoPrint Manager\var\pddir
- Remote namespace folder: **none**
- Workspace path: C:\Program Files\IBM\InfoPrint Manager\var\pd
- AFP support workspace path: C:\Program Files\IBM\InfoPrint Manager\var\psf
- Default fonts search path: C:\Program Files\IBM\InfoPrint Manager\fontlib
- Default resource search path: C:\Program Files\IBM\InfoPrint Manager\reslib
- Shared client path: **none**

If you have modified any of these paths, you need to make the same modifications on the target server:

1. On the new installation, stop the **pdserver** and open the Service Configuration dialog.
2. Change the paths that were customized to match the ones from the original server.
3. Copy the contents of the font and resource folder from the original server to the new one.
4. Start the **pdserver**.

Management Console “Edit->Service Configuration” checkboxes

1. Open the Management Console.
2. Go to Edit->Service Configuration.
3. Check if the following checkboxes have these default values:
 - Automatically start server during system startup = checked
 - Automatically start IPP gateway during system startup = not checked
 - Confirm object delete = checked
 - Run notification server on this system = checked
 - Run InfoPrint Manager LPD service = checked
4. If any of these are not as above, open the Service Configuration dialog on the new server and check the same checkboxes as on the original server.

“Communication Ports” Management Console registry

1. Open the Management Console.
2. Go to **Edit->Service Configuration**.
3. Check if the following fields have these default values:
 - Server interface port numbers: 6880 through 6889
 - Client interface port numbers 6874 through 6877
4. If any of these are not as above, open the Service Configuration dialog on the new server and make the same modifications as on the original server.

Windows Gateway printer definitions

Check if Windows Gateway printers are installed on the source system:

1. Open the Management Console and select **Objects -> Windows Gateway Printers**.
2. If there are printers defined, then you need to migrate them:
 - In the Management Console, look at these Gateway Printer normal settings (share name, target destination, Windows driver name, poll interval, etc) and the Advanced settings and write them down.
 - On the target system, install the printer driver used by each gateway printer and then go to the Management Console and create the gateway printer with the same settings from the first step.

DPF and MVS Download settings

If there are folders in `\var\pd\dpf\receivers` directory, these folders must be copied to the new server. Each of these folders represents one DPF Host Receiver.

| After that, check if the receivers configuration was customized:

- | 1. Open the Management Console.
- | 2. Go to **Options-->Preferences**.
- | 3. Check these default values:
 - | • The field "MVS Download receivers view interval" is by default 0.
 - | • The field "DPF Host receivers view interval" is 30.
 - | • "DPF Resources view interval" is 0.
 - | • The "Disk Usage for Jobs/Resources directory" is unchecked.
 - | • All three checkboxes for "Optional DPF Resource columns to display" are checked.
- | 4. If the existing values are different than the defaults listed above, make the same modifications on the target server also.
- | 5. For every receiver from the **Management Console > MVS Download Receivers**, complete these steps:
 - | • Double click on each of the receivers and write down the settings of the receiver.
 - | • On the new server, recreate each receiver from the **Management Console -> MVS Download Receivers** by right clicking it and selecting **New**.
 - | • Use the same settings that were previously written down.
 - | • Additionally, for each receiver you check the file from the "Destination Control File" field. The default file should be `\var\pd\mvsd\mvsdmap.txt`. If this is not the default or if the this file has been customized it, copy it to the same location on the new server.
 - | • For each receiver in the Advanced properties window, check if the field "Exit Program Name" points to a file; if it does, copy this file at the same location on the new server.

Chapter 21. Setting up interoperating environments

This section describes this interoperating information:

- “Understanding interoperating environments”
- “Setting up a print environment with multiple Windows servers” on page 135
- “Configuring for interoperability between an InfoPrint AIX server and an InfoPrint Windows server” on page 138

Understanding interoperating environments

When you install an InfoPrint Manager server, the install process creates a namespace for that server. The *namespace* is a directory structure where InfoPrint Manager stores the location information of all of your InfoPrint objects, including the server itself, queues and destinations, and the Access Control Lists (ACLs) used by InfoPrint Manager Security. On a Windows system, the namespace is located by default at `<install path>\var\pddir`, where `<install path>` is the directory that you installed InfoPrint Manager in.

If you install a second InfoPrint Manager server on another system on your network, that server will create its own namespace and the two servers will operate entirely independent of each other. In some cases, however, you might want your servers to be able to work together. To make InfoPrint Manager servers work together, you set up an *interoperating environment* in which two or more InfoPrint Manager servers share the same namespace. The namespace is on one of the servers and the other servers are granted permissions that allow them to use that directory.

In InfoPrint Manager for Windows, Version 2, Release 2, you should only set up two or three servers to interoperate (not four or more). Those servers can all be installed on Windows 2000 systems, on Windows 2003 systems, on Windows XP systems, or on a combination of Windows systems. In addition, if you have InfoPrint Manager for AIX, it can be one of the three interoperating servers as well.

When configuring InfoPrint Manager servers to support interoperability, make sure that these rules are followed:

1. Each InfoPrint Manager server must be accessible by all other InfoPrint Manager servers using the same IP address.

For example, if **Server1** is an InfoPrint Manager AIX server with an IP address of 9.99.155.122, then all other InfoPrint Manager servers must use 9.99.155.122 to access **Server1**.

2. The IP address for each InfoPrint Manager server must be the address that is identified for the first (or primary) network card that is defined to that server.

Reasons for setting up an interoperating environment

Not every printing system needs multiple InfoPrint servers. In fact, in many environments one InfoPrint server is adequate. However, in print environments that do very high volume printing or that print in remote locations (for example, a main office with branch offices in different parts of the city), interoperating InfoPrint servers can provide important benefits:

- Interoperating servers are much more scalable than single servers.

- If your print volume increases and you find that you need more processing power or memory to be able to meet the demand, you can add a second server. However, by making the servers interoperate, you still only have one printing system to administer.
- If your business expands and you add another office, you can add another server to the namespace. You'll have to define any new printers that you add to the network, but you won't have to redefine existing printers or move resources again to be able to use them from the new location.
- Interoperating servers allow you to distribute print server functions across systems.
Remote locations can have their own local servers, but you can administer them from a central location.

Multiserver configuration examples

There are various ways to set up multiple InfoPrint Manager servers and have them work together. Below are some example configurations and the benefits they provide.

- **Install two InfoPrint Manager servers in the same physical location.**

One of the servers contains all of the InfoPrint print queues and logical destinations, and the other contains all of the actual destinations. In this setup, you balance processing between the two systems by spooling and scheduling on one system and transforming and printing on the other.

- **Install one InfoPrint Manager server in the main office and one in each branch office.**

The namespace is located on the InfoPrint Manager server in the main office, and the other two servers are set up to share it. All three servers have logical destinations, queues, and actual destinations defined in them, and the users submit their print jobs to their local server. About 90% of the time, the servers handle local print jobs, so it makes sense for each location to have its own server. However, several times each week, the main office generates reports that are needed at the branches. Instead of printing the reports and sending them across town or faxing several hundred pages to each office, they simply send the print job to printers at the branch offices. If necessary, the branch offices can do the same thing.

In addition, because of the common namespace, the system administrator can monitor all of the servers from a central location; if there's a problem at one of the branches, he can investigate it from the main office.

Important issues in interoperating environments

Before you set up an interoperating environment, consider these issues.

- **Which system should contain the namespace?**

The namespace does not contain large volumes of data (so it doesn't have to reside on the system with the most disk space) and it doesn't move a lot of data across the network. However, because all of the other servers will rely on the namespace server, it must be available and reliable. Put the namespace on the system that is the most available (always running) and most reliable (doesn't have to be rebooted often).

- **InfoPrint Manager Security**

All of the information that InfoPrint Manager Security uses to protect your printing system (groups and Access Control Lists (ACLs)) is stored in the namespace. When you share the namespace, the groups and ACLs that you set on the namespace server apply to all of the servers; the groups and ACLs that

you set on the other servers before they joined the common namespace disappear. As a result, you should wait until you have the interoperating environment set up before you set up any security on the systems.

- **Printer drivers**

If you are setting up an interoperating environment with mixed operating systems (for example, two Windows 2000 systems and one Windows 2003 system), make sure that the printer drivers you choose work correctly in both environments.

Setting up a print environment with multiple Windows servers

Some print environments require more than one InfoPrint Manager server to handle their print management. If you are installing and configuring more than one InfoPrint Manager for Windows server in your print environment, this section will tell you what you need to do to make those servers work together.

When you install InfoPrint Manager, the install process creates a namespace for that server. The *namespace* is a directory structure where InfoPrint Manager stores the location information of all of your InfoPrint objects, including the server itself, queues and destinations, and the Access Control Lists (ACLs) used by InfoPrint Manager Security. On a Windows system, the namespace is located by default at <install path>\var\pddir, where <install path> is the directory that you installed InfoPrint Manager in.

If you install a second InfoPrint Manager server on another system on your network, that server will create its own namespace and the two servers will operate entirely independent of each other. In some cases, however, you might want your servers to be able to work together. To make InfoPrint Manager servers work together, you set up an *interoperating environment* in which two or more InfoPrint Manager servers share the same namespace. The namespace is on one of the servers (the *namespace server*) and the other servers (the *non-namespace servers*) are granted permissions that allow them to use that directory.

With InfoPrint Manager for Windows, Version 2, Release 2, you should only set up two or three servers to interoperate (not four or more). Those two or three servers can all be installed on Windows systems, or on a combination of Windows systems. In addition, if you have InfoPrint Manager for AIX, it can be one of the three interoperating servers as well.

If you want InfoPrint Manager for Windows and InfoPrint Manager for AIX servers to work together, see “Configuring for interoperability between an InfoPrint AIX server and an InfoPrint Windows server” on page 138.

Notes:

1. You can only install one InfoPrint Manager server on a given Windows workstation or server.
2. For your InfoPrint Manager servers to work together, they must all operate in the same domain.
3. If your users will be submitting jobs directly to actual destinations, the actual destination and the associated queue and logical destination must be on the same server.
4. Once you have your multi-server system running, if the system that one of your non-namespace servers is installed on shuts down or is restarted, that InfoPrint Manager server will not restart automatically when the system

restarts, even if you have that option selected in the Management Console. You must open the Management Console for that server and start it manually.

5. You must set up each of your InfoPrint Manager servers so that all of the other InfoPrint Manager servers can access them using the same IP address. For example, Ipserv1 sometimes uses the IP address 9.99.155.122 and other times uses 9.89.214.162, depending upon the machine that is trying to connect to it. Ipserv2 and Ipserv3 must be able to access Ipserv1 through the same one of those addresses; if Ipserv2 uses 9.99.155.122 to access Ipserv1, Ipserv3 must use 9.99.155.122 as well.
6. If you have more than one network adapter card in the system that InfoPrint Manager runs on, the other InfoPrint Manager systems must be able to access the system through the IP address that corresponds to the first (or primary) network card in the system.

Configuration example

The recommended way to set up interoperating Windows servers is to create one domain user account and let all of the InfoPrint Manager services use it as their login account. The steps below describes how to set up this type of configuration.

Note: It is possible to configure your system so that each InfoPrint Manager service has its own domain user account. If you want set up this alternate configuration, you can follow the same basic instructions. However, in step 4, you would create a domain user for each server. Then, when you assign user rights and set up sharing in subsequent steps, you must make sure you use the same user and password consistently on each system.

To have your InfoPrint Manager services share a namespace and a log in account.

1. *Install all of your InfoPrint Manager servers.*

Follow the installation instructions in *InfoPrint Manager for Windows: Getting Started*. When you are finished, your servers will be operating independently.

2. *Stop all of your InfoPrint Manager servers.*

On each system that an InfoPrint Manager server runs on, open the InfoPrint Manager Management Console and click **File → Stop Server**.

Note: If you are using the SAP Print Feature with an OMS configuration, you must stop the SAP Service from the Control Panel. Click the Windows Start button and select **Settings → Control Panel**. Go to SAP Service Properties and select to stop the service. For more details on this and other considerations for SAP systems, see the *SAP R/3 Configuration and Printing Guide* available on the InfoPrint Solutions Company Web site.

3. *Decide which server you want to use as the namespace server.*

It is highly recommended that you choose your most reliable server to be the namespace server since any disruption of service in the namespace server has an impact on all of the servers in the configuration.

4. *Set up the common domain user account that the servers will run under.*

Windows 2000/2003

- a. Log on to the domain that your InfoPrint Manager servers operate in as a domain administrator.
- b. Click the Windows **Start** button and select **Programs → Administrative Tools → Active Directory Users and Computers**.

- c. In the left pane of the **Active Directory Users and Computers** window, find the **Users** item.
- d. Right-click the **Users** directory and click **New → User** from the pop-up menu.
- e. In the first dialog of the **New Object – User** wizard, type a name for this user in the **Full name** and the **User logon name** fields.

Note: You do not have to fill in the other name fields.

- f. Click **Next**.
- g. In the second dialog of the **New Object – User** wizard, enter a password for this user. It is recommended that you select the **Password never expires** check box so you do not have to change the password and update all of your servers on a regular basis, and clear all of the others.
- h. Click **Next** to verify the settings for the user and complete the wizard.
- i. Once you have created the user, right-click the user in the right pane of the **Active Directory Users and Computers** window and select **Add members to a group** from the pop-up menu.
- j. In the **Select Group** dialog, find and select the Domain Administrators (or Domain Admins) group. Click **OK** to add your user to the group.

Note: You can leave the **Name** field blank.

- 5. *Grant the appropriate user rights to the new domain user on all of the systems that InfoPrint Manager is installed on.*

Windows 2000

- a. Log on to one of the systems as a user who is a member of the Domain Administrators group.
 - b. Click the Windows **Start** button and select **Settings → Control Panel**.
 - c. In the **Control Panel** window, double-click **Administrative Tools**.
 - d. In the **Administrative Tools** window, double-click **Local Security Policy**.
 - e. In the right pane of the **Local Security Settings** Window, double-click **Local policies**.
 - f. Double-click **User Rights Assignment** in the right pane.
 - g. In the list of user rights, select **Act as part of the operating system** and double-click it.
 - h. In the **Local Security Policy Setting** dialog, click **Add**.
 - i. In the **Select Users or Groups** dialog, click the arrow on the drop-down list box and select the domain that your InfoPrint Manager servers exist in.
 - j. Find and select the domain user you created, and click **Add**.
 - k. Click **OK** in the **Select Users or Groups** dialog.
 - l. Click **OK** in the **Local Security Policy Setting** dialog.
 - m. Repeat from step 5g for two other user rights: **Create permanent shared objects** and **Log on as a service**.
- 6. *Set up sharing for the namespace directory on the namespace server.*
 - a. Log on to the namespace server.
 - b. Open the InfoPrint Manager Management Console and select **Edit → Service Configuration**.
 - c. Make note of the directory listed in the **Base namespace path** field. The path will be <install path>\var\pddir.
 - d. Open Windows Explorer and navigate to that directory.

- e. Right-click the folder for that directory and select **Sharing** from the pop-up menu.

Configuring for interoperability between an InfoPrint AIX server and an InfoPrint Windows server

By performing this set of procedures on both an InfoPrint AIX server and an InfoPrint Windows workstation, you can configure InfoPrint Manager to support interoperability between InfoPrint AIX servers and InfoPrint Windows servers.

Note: If you are interested in configuring two or more InfoPrint AIX servers for interoperability, refer to "Installing secondary InfoPrint servers" in *InfoPrint Manager for AIX: Getting Started*.

When configuring InfoPrint Manager AIX and Windows servers to support interoperability, make sure that these rules are followed:

1. Each InfoPrint Manager server must be accessible by all other InfoPrint Manager servers using the same IP address.
For example, if **Server1** is an InfoPrint Manager AIX server with an IP address of 9.99.155.122, then all other InfoPrint Manager servers must use 9.99.155.122 to access **Server1**.
2. The IP address for each InfoPrint Manager server must be the address that is identified for the first (or primary) network card that is defined to that server.
3. All printer objects (whether logical destination, actual destination, or queue) must have unique names if they are used by interoperating InfoPrint servers.

If the printer objects do not possess unique names, you might have trouble viewing them through the **InfoPrint Manager Interface** from a non-namespace server.

LPD service for AIX can be used however, by submitting jobs with the **lpr** command to actual destinations on the AIX server. The **lpr** command can also still be used as before with Windows printer destinations (just not InfoPrint Manager printers).

Setting up the InfoPrint AIX server for interoperability

Perform these procedures on your InfoPrint AIX server to prepare for interoperability with an InfoPrint Windows server. This presumes that you have installed InfoPrint Manager for AIX Version 4 Release 3 on your AIX server and have logged onto the server as **root**.

Starting NFS and connecting the AIX secondary server

1. Open a dtterm window and type: `/etc/rc.nfs` to either start the NFS daemon or make sure that it has been started.
2. Open a dtterm window, type `smit`.
3. From this panel, specify the **InfoPrint Printing System** → **InfoPrint Utilities** → **Configure Secondary Servers (NFS)** → **Link from Primary Server to Secondary Server** path.
4. Specify both the host name and the IP address of the InfoPrint Windows server with which you intend to interoperate for the **Secondary Server Host Name** and the **Secondary Server IP Address** fields respectively. For example, `wserv1` and `9.99.193.120` represent the InfoPrint Windows server in the pop-up panel displayed below:

You should specify no for the **Is /ipdata used for job ticketing?** field, unless you are using this AIX InfoPrint Manager server with AIX Fast Connect to allow for file sharing with an InfoPrint Submit Express Windows client for preflighting jobs and saving RIPped files.

You should also allow the **Retain secondary server previously defined?** field to default to yes if you have more than one InfoPrint server functioning as a secondary server.

5. Once verified, click **OK**, and then click **Done**.
6. Return to the first SMIT panel described in step 2 on page 138.

Adding users to and modifying permissions for FST security groups

1. Set up the FST Security groups on your AIX server by taking the **InfoPrint Printing System → Security → Groups → Show Group** path. From the single-select list pop-up dialog, you should see these three groups: **acl_admin**, **admin**, and **oper**.
2. Once you have verified the existence of these two groups, you should make sure that users in the **admin** group can issue all the InfoPrint **pd*** commands. From SMIT, take the **InfoPrint Printing System → Security → Access Control → Access Control for Operations → Show Access Control List** path.
3. Once complete, return to the first SMIT panel described in step 2 on page 138.
4. Take the **InfoPrint Printing System → Security → Groups → Add Users to a Group** path. Then specify **acl_admin** for the **Group Name** field. Enter the name of the Windows administrative user you normally log in to the InfoPrint Manager for Windows server machine as for the **User or Users to Add** field. For the remainder of this procedure we will refer to this Windows administrative user as **ipwinadmin***. Note that **ipwinadmin** must be followed by an asterisk (*) to account for the fully qualified host name. (For example, **ipwinadmin@ipwinservermachine.infoprint.com**)

From the **Add Users to a Group** panel, specify **admin** for the **Group Name** field. Enter the name of the Windows administrative user you normally log in to the InfoPrint Manager for Windows server machine as for the **User or Users to Add** field. Note that you do not have to do this step for the **oper** group.
5. Once complete, click **OK** to make sure the changes take effect and return to the first SMIT panel described in step 2 on page 138.

Now you can proceed to “Setting up the ipwinadmin id on a Windows 2000/2003 domain controller.”

Setting up the ipwinadmin id on a Windows 2000/2003 domain controller

On the Windows 2000/2003 domain controller server for the domain where your servers are located in, you must do this task to make sure that the InfoPrint Manager Windows servers can access the namespace.

1. Log on to the Primary Domain Controller for the domain that your InfoPrint Manager servers operate in as a domain administrator.
2. From the **Start** menu, access the **Programs → Administrative Tools → Computer Management** path.
3. From the **Computer Management** window, click the plus (+) sign next to the **Local Users and Groups** list.
4. Click the **Users** folder and select **New User** from the **Action** pull down menu at the top.

5. In the **User name** field type `ipwinadmin`. In the **Password** and **Confirm Password** fields type a password value.
We recommend that you select **Password never expires** so you don't have to change the password and update all of your servers on a regular basis.
6. Click **Create** and close the dialog (it will be prompting you to add another user's information).
7. From the **User** window, open the `ipwinadmin` that you just finished creating by double-clicking on the list item.
8. Click **Member Of**, click **Add**, then double-click **Administrators**.
9. Click **OK**.
10. Click **OK** a second time to finish.

Creating the 'ntuser' ID on the InfoPrint AIX server

This procedure creates the example `ntuser` ID that the InfoPrint Windows server will use to share and manage namespace directories and files that reside on the InfoPrint AIX server.

1. Specify SMIT and take the **Security & Users** → **Users** → **Add a User** path.
2. On the Add a User panel, specify `ntuser` as the **User NAME** field value, specify `printq` for the **Primary GROUP** field, `printq,system` as the **Group SET** field, and `/home/ntuser` for the **HOME directory** field.
Change the **File Creation UMASK** field value to `003`
Make sure the **Login AUTHENTICATING Grammar** field is either blank or specifies `compat` (if SMIT will not process the command without an entry in this field).
Make sure the **Password REGISTRY** field value specifies `files` and take the default for all other fields.
3. Click **OK** to save the changes and exit the SMIT interface.
4. Login to the server as `root` and set the initial password.
5. Login as `ntuser` with the initial password, then change the password for `ntuser`. Remember this password, as you will need it later for other procedures.

Ensuring correct AIX file permissions for interoperability

1. Log on to the server as `root`.
2. From a `dterm` window, type `cd /var/pddir/default_cell`.
3. Make sure that all the files residing in this directory have the correct permissions to be read by the InfoPrint Windows server by typing `chmod -R 774 * .`
4. Make sure that all the files residing in this directory belong to the correct group by typing `chgrp -R printq * .`

If these last two steps have been performed correctly, entering an `ls -l` at the command line should display these permissions and group values:

```
drwxrwxr-- 3 root      printq      512      ....      acl
drwxrwxr-- 3 root      printq      512      ....      printers
drwxrwxr-- 2 root      printq      512      ....      queues
drwxrwxr-- 2 root      printq      512      ....      servers
-rwxrwxr-- 1 root      printq      4        ....      version
```

5. Complete your preparations on the InfoPrint AIX server by logging in as `ntuser`.

Once you have completed these steps, the InfoPrint AIX server is ready for interoperability.

Configure Windows servers for interoperability

Some print environments require more than one InfoPrint Manager server to handle their print management. If you are adding one or more InfoPrint Manager for Windows servers to your print environment, this section will tell you what you need to do to make those servers work with the InfoPrint Manager AIX Version 4.3 server.

Notes:

1. In an interoperating environment that includes an AIX server and Windows servers, the namespace will reside on the AIX server.
2. You can only install one InfoPrint Manager server on a given Windows workstation or server.
3. If your users will be submitting jobs directly to actual destinations, the actual destination and the associated queue and logical destination must be on the same server.
4. Once you have your multi-server system running, if one of your Windows servers shuts down or is restarted, InfoPrint Manager server will not restart automatically when the system restarts. You must open the Management Console for that server and start it manually.

Installing MS Services for UNIX on the InfoPrint Windows servers

You must do this task on each Windows server:

1. Using the CD-ROM, install Microsoft Windows Services for UNIX[®] from the "Add-on Pack for Microsoft Windows Workstation and Server 4.0" at Version 1.0 or higher.
2. Reboot each InfoPrint Windows server.

Setting up the common account for InfoPrint Windows servers on a 2000/2003 domain controller

On the Windows 2000/2003 domain controller server for the domain where your servers reside, you must create the domain account that all the InfoPrint Windows servers will run under. Do this task to make sure that the InfoPrint Manager Windows servers can access the namespace.

1. Log on to the Primary Domain Controller for the domain that your InfoPrint Manager servers operate in as a domain administrator.
2. From the **Start** menu, access the **Programs → Administrative Tools → Computer Management** path.
3. From the **Computer Management** window, click the plus (+) sign next to the **Local Users and Groups** list.
4. Click the **Users** folder and select **New User** from the **Action** pull down menu at the top.
5. In the **User name** field type **ntuser**. In the **Password** and **Confirm Password** fields, type the **ntuser** password from step 5 on page 140.

We recommend that you select **Password never expires** so you do not have to change the password and update all of your servers on a regular basis.

6. Click **Create** and close the dialog (it will be prompting you to add another user's information).
7. From the **User** window, open the **ntuser** that you just finished creating by double-clicking on the list item.
8. Click **Member Of**, click **Add**, then double-click **Administrators**.
9. Click **OK**.
10. Click **OK** a second time to finish.

Grant appropriate user rights to the domain user on all InfoPrint Manager Windows 2000/2003 servers

To make sure that the Windows 2000/2003 InfoPrint Manager servers can run as a Windows service using the domain userid **ntuser**, you must make sure that this userid has the proper level of authority on each Windows 2000/2003 InfoPrint Manager server system.

1. Log on to one of the systems as a user who is a member of the Domain Administrators group.
2. Click the Windows **Start** button and select **Settings → Control Panel**.
3. In the **Control Panel** window, double-click **Administrative Tools**.
4. In the **Administrative Tools** window, double-click **Local Security Policy**.
5. In the right pane of the **Local Security Settings** Window, double-click **Local policies**.
6. Double-click **User Rights Assignment** in the right pane.
7. In the list of user rights, select **Act as part of the operating system** and double-click it.
8. In the **Local Security Policy Setting** dialog, click **Add**.
9. In the **Select Users or Groups** dialog, click the arrow on the drop-down list box and select the domain that your InfoPrint Manager servers exist in. Find and select the domain user you created, and click **Add**.
10. Click **OK** in the **Select Users or Groups** dialog.
11. Click **OK** in the **Local Security Policy Setting** dialog.
12. Repeat from step 7 for two other user rights: **Create permanent shared objects** and **Log on as a service**.

Configuring the NFS client to access the namespace

This NFS client configuration will need to be done on each InfoPrint Manager for Windows server that will access the namespace on the AIX InfoPrint Manager server machine.

1. Log on to the Windows InfoPrint Manager server as the domain user **ntuser** who was created in the Setting Up the Common Account for InfoPrint Windows Servers on the Domain Controller procedure above.
2. From the **Start** menu, access the **Settings → Control Panel** path, and double-click **Client for NFS** to configure the NFS client to access the namespace.
3. Click **Authentication**:
 - a. Enter **ntuser** in the **User Name** field.
 - b. Enter the InfoPrint AIX password for **ntuser** from step 5 on page 140) in the **Password** field.
 - c. Click **PCNFSD Server** and type in the name of an InfoPrint Manager AIX server.

4. Click **Filenames** and set values as follows:

| | |
|---|-----------|
| Preserve Case (no conversion) | check |
| Generate Unique Names for Existing Files with Mixed Case Filenames | unchecked |
| Match Filenames Exactly | check |
| Match Filenames Ignoring Case | unchecked |

5. Click **OK**.
6. When you receive the pop-up dialog box that says NFS Login Successful, click **YES**.
If you do not receive this message, go back to the **Authentication** tab and make sure that the ID and password match those set up in step 5 on page 140.
7. Log off the Windows InfoPrint Manager server as the domain user `ntuser` and log on to the Windows InfoPrint Manager server as the `ipwinadmin` user.
8. Repeat steps 2 through 6 from above.

Verifying access to the AIX namespace that allows interoperability on Windows 2000/2003

From each InfoPrint Windows 2000/2003 server, you must verify that you have access to the namespace on the InfoPrint AIX server. You can do this by mapping a network drive (as `ntuser` with the `ntuser` password from step 5 on page 140) from the Windows 2000/2003 server to the shared namespace on the InfoPrint AIX server.

1. From the main Windows view, right-click **My Network Places**, select **Map Network Drive**. In the dialog, use the **Folder** field to specify:
`\\aix_servername\var\pddir\default_cell`
where `aix_servername` is the name of the InfoPrint AIX server.
2. Check **Reconnect at Login**.
3. Click **Connect Using Different User Name**.
4. A dialog box will open asking for a username and password associated with `ntuser`. Specify the `ntuser` password from step 5 on page 140 in the **Password** field.
5. Click **OK** and the **NFS Client** window opens.
6. Click **OK** again. A small notification window should appear that says NFS Login Successful.
Since the NFS Client was set up in the section *Configuring the NFS Client to Access the Namespace*, click **OK**.
7. Click **Yes** to accept the current login and **Finish** to map the drive.
If the drive mapped correctly, a new window should open to the mapped drive's contents, and the **NFS Client** and **Map Network Drive** windows should be gone.

Configuring the 'ntuser' ID for interoperability on the InfoPrint Windows servers

Make sure that you complete this procedure on all InfoPrint Windows servers.

Note: Once this procedure is completed, make sure that you do all namespace administration from the Management Console on the InfoPrint Windows server, not the InfoPrint AIX server.

On all Windows servers:

1. Log on as user `ipwinadmin`.
2. From the **Start** menu, click **Programs → InfoPrint Manager → Management Console**.
3. Stop the server by either clicking **Stop** or clicking **File → Stop Server**.
4. Access the **Edit → Service Account/Domain** path.
5. Specify the domain name in the **Domain** field, the account you created during step 4 on page 141 in the **User account** field, and the password in the **Password** field.
6. Click **OK**.

Note: A notification server was installed with each of your InfoPrint Manager servers. However, now that the namespace is shared, you only need to run one of them. The notification server must be run on the namespace server. Disable all but one of the InfoPrint Manager Notification servers.

7. Click **Edit → Service Configuration**.
8. In the **Settings** group box, clear both the **Run notification server on this system** and **Run InfoPrint Manager LPD service** check boxes.
9. Clear the **Base namespace path** field and type the drive letter that you want to use to link to the namespace followed by a colon (for example, type `x:`). Use the same drive letter that you used when mapping the network drive in step 4 on page 141.
10. In the **Remote namespace folder** field, enter the Universal Naming Convention (UNC) name of the shared directory on the namespace server in this format: `\\namespaceserver\sharename`. The sharename of the namespace on an AIX server is `default_cell`. For this example, `\\prince\var\pddir\default_cell`.
11. Click **OK**.
12. Restart all of the InfoPrint Manager servers by selecting **File → Start Server** on each Management Console.
13. Verify that all of the servers are now sharing the namespace.
 - Log on to any one of the machines that holds an InfoPrint Manager server, open a command prompt.
 - Start the InfoPrint Manager Administration Interface.
 - Click **Server → Show All Servers**.

You should see a list of all of the servers that are using the namespace. If any of them do not appear, stop the servers and check the settings that you changed in step 7 for that server.

Verifying the authority of the ipwinadmin ID

Use this procedure to verify that the `ipwinadmin` id has permission to both modify security groups and issue all the InfoPrint `pd*` commands.

1. Verify that the InfoPrint servers are interoperating by performing step 13 of “Configuring the ‘ntuser’ ID for interoperability on the InfoPrint Windows servers” on page 143.
2. Make sure that you created a user named `ipwinadmin` in the domain in “Setting up the `ipwinadmin` id on a Windows 2000/2003 domain controller” on page 139.
3. Log on to the InfoPrint Windows server as user `ipwinadmin`.
4. From the **Start** menu, click **Programs → InfoPrint Manager → Management Console**.

5. From the left pane, click **Security**.
6. Double-click **Groups**.
7. From the Groups view in the right pane, highlight the **acl_admin** item and select **open** from the drop-down menu.
8. Click **Add**.
9. In the **Add Member to Group** dialog, type ipwinadmin* in the field provided. In the **Groups** view, you should be able to see ipwinadmin listed in the **Members** column for the **admin** group.
10. From the Groups view in the right pane, highlight the **admin** item and select **open** from the drop-down menu.
11. Click on the **Add...** button.
12. In the **Add Member to Group** dialog, type ipwinadmin* in the field provided. In the **Groups** view, you should be able to see ipwinadmin listed in the **Members** column for the **admin** group.
13. Log on to the InfoPrint Windows server as ipwinadmin.
You should be able to create and modify security groups and issue all the InfoPrint **pd*** commands.

Part 3. Administrative Procedures: Configuring for Host Printing

Chapter 22. Setting up to use MVS Download

Configuring MVS Download

The MVS Download feature of InfoPrint Manager uses a *Destination Control File (DCF)* to map Job Control Language (JCL) parameters to InfoPrint Manager submission parameters. A default DCF called `mvsdmap.txt` is provided with InfoPrint Manager; it is installed in the `<install path>\var\pd\mvsd` directory, where `<install path>` is the directory that you installed InfoPrint Manager in. MVS Download receives JCL parameters from the host system, applies the DCF to it, and generates a corresponding list of InfoPrint parameters. The list of InfoPrint parameters is then passed to the MVS Download Exit Program (or *Exit*) so InfoPrint Manager can process the job.

The MVS Download feature of InfoPrint Manager also invokes an Exit for every file received. This Exit is responsible for performing some action on the received file. One Exit is provided with InfoPrint Manager: Microsoft Visual Studio 2005. The Exit submits the file to InfoPrint Manager using `pdpr` and logs any errors. The exit also stops the MVS Download receiver if the `pdpr` fails. Microsoft Visual Studio 2005 supports AFP Download Plus and multiple data set functions.

You must do these tasks to be able to print using the MVS Download feature of InfoPrint Manager:

1. Create the InfoPrint destination or destinations that you want to submit your print jobs to.
2. Make the AFP resources that you need to use for your print jobs available to InfoPrint Manager.
3. **[Optional]**Modify the DCF.
4. **[Optional]**Modify the Exit Program.
5. Create an MVS Download receiver that will accept print jobs from the host and tie all of the other elements together.

All printing configurations must complete steps 1, 2, and 5. For information about creating destinations, see the *InfoPrint Manager for Windows: Getting Started*. See “Making your AFP resources available to InfoPrint Manager” on page 166 for information about completing step 2. If you can use the sample DCF and Exit that are provided with InfoPrint Manager (the default configuration), you do not have to do steps 3 and 4. See “Setting up a default MVS Download configuration” on page 150 for instructions on completing step 5 for the default configuration. You can use the default configuration if all of these conditions apply:

1. On jobs that are sent to this MVS Download receiver, the DEST listed on the job when it is received from the host (converted to lowercase) identifies the InfoPrint actual or logical destination that the job should be submitted to

OR

Jobs with no DEST specified will be submitted to the InfoPrint actual or logical destination that you set as the default for this receiver.

2. You do not use InfoPrint job scheduling functions based on media type.
3. When submission of a print job fails (for example, because the server is stopped or because the DEST requested does not exist), you will accept the default action that the receiver automatically stops.

4. You will not use the multiple data set function of MVS Download.

If you do not meet all of the criteria, you will need to modify the DCF, the Exit, or both. Some of the reasons that you would need to modify the DCF are:

1. You want to use alternate attributes or no attributes for some `mvs_keywords`.
2. You do not want the DCF to change the DEST value it receives to lowercase.
3. You want to use InfoPrint job scheduling based on media type.
4. You see that some of the MVS to InfoPrint mappings in the sample DCF are not what you want.
5. You want to identify MVS job defaults that are not communicated from MVS (for example PAGEDEF).
6. You want to identify InfoPrint submission parameters to use on all jobs (for example, the font resource directory on your Windows system).
7. You use the multiple data set function of MVS Download.

See these sections for instructions on modifying your DCF and Exit, and creating an MVS Download receiver:

- “Understanding and using the MVS Download destination control file” on page 151
- “Understanding the MVS Download Exit Program” on page 161
- “Creating an MVS Download Receiver” on page 163

Setting up a default MVS Download configuration

Once you have made your resources available, the only tasks you need to do on your Windows system to set up a Default configuration are:

- Create an InfoPrint destination.
For information about creating destinations, see the *InfoPrint Manager for Windows: Getting Started*.
- Create and configure an MVS Download receiver that uses the default DCF and Exit to send print jobs to that destination.
For instructions, see “Creating an MVS Download Receiver for a default configuration.”

Creating an MVS Download Receiver for a default configuration

Before you can begin sending jobs from the MVS JES spool to InfoPrint Manager through the MVS Download feature, follow this procedure to set up an MVS Download Receiver:

1. Open the InfoPrint Manager Management Console.
2. Left-click the **MVS Download Receiver** item in the left pane to select it.
3. Right-click the **MVS Download Receiver** item in the left pane to open a pop-up menu.
4. In the menu that pops up, select **New**.
The **Add MVS Receiver** dialog opens.
5. Fill in the fields according to these specifications. For more information about the dialog and the fields it contains, see the Management Console online help.
 - **Port Number:** Enter the port number that you want this receiver to use when it communicates with the host system. This number must match the port number that is specified in the Routing Control File used by the MVS

Download FSA for this computer's IP address or the PORTNO in the PRINTDEV for the AFP Download Plus FSA.

- **Target Destination:** Select the default InfoPrint destination that you want this receiver to submit jobs to from the drop-down list. InfoPrint Manager will only submit a job to this destination if the job does not have a DEST specified when it comes from the host system.
- **Destination Control File:** Do not change this path.
- In the **Processing Options** group box, both options are selected by default and can be left that way.

Note: When the **Retain command files** check box is selected, InfoPrint Manager saves the control files for any MVS Download print jobs that failed in print submission. Therefore, when you want to resubmit those jobs, you do not have to download them from the host system again; the files are still on your InfoPrint server. You can deselect this box, but any jobs that fail in processing will need to be resubmitted from the host to be printed.

Operators should evaluate any processing failures, correct the problems that caused the failures, and resubmit the jobs either from the host system (if this box is deselected) or from the receiver (if this box is selected).

For more information, see “Deleting orphan files and resubmitting jobs to MVS Download” on page 304.

6. In the **Error Processing Options** group box, neither option is selected by default and can be left that way.
7. In the **Mapping Options** group box, none of the options are selected by default and can be left that way.
8. Click **OK**.
One or more pop-up informational messages might appear; read them and click **OK** to dismiss them.
9. Select the **MVS Download Receivers** item in the left pane of the Management Console.
You should see the receiver you just created in the right pane. The receiver status might be **STOPPED**, but it should start momentarily. Click **Refresh View** on the toolbar until the status changes to **RUNNING**.

Once the receiver is running, it is ready to receive print jobs from the host system.

Understanding and using the MVS Download destination control file

The MVS Download Destination Control File (DCF) is a flat text file that consists of Control Statements, blank lines, and comments. Each line has a maximum length of 1023 bytes. Tabs are treated as blank spaces.

Note: If you change the DCF, the changes will not become active until you stop and restart the receivers that use that DCF.

The DCF maps the MVS keywords and parameters it receives from the host to the pdpr `-x` and `-p` attributes and parameters. The supplied MVS Download Exit uses pdpr to submit jobs to the target destination. To modify any of the other pdpr options, you must change the Exit Routine.

The sample DCF that comes with InfoPrint Manager is set to perform the mappings listed in Table 11.

Note: This table only lists the Mapping statements in the sample DCF. It does not reflect the Default statements and Global statements that are set.

Table 11. Mappings in the Sample DCF

| mvs_definition | InfoPrint Attribute and Value for MVS Download | InfoPrint Attribute and Value for AFP Download Plus |
|-----------------------|---|---|
| ACCOUNT | account-text | account-text |
| ADDRESS1 | address1-text | address1-text |
| ADDRESS2 | address2-text | address2-text |
| ADDRESS3 | address3-text | address3-text |
| ADDRESS4 | address4-text | address4-text |
| BUILDING | building-text | building-text |
| CC=NO | carriage-control-type=none | ignored |
| CC=YES | ignored | ignored |
| CCTYPE=ANSI | carriage-control-type=ansi-ebcdic | ignored |
| CCTYPE=MACHINE | carriage-control-type=machine | ignored |
| CCTYPE=ASCII | carriage-control-type=ansi-ascii | ignored |
| CHARS | chars | ignored |
| CLASS | printer-pass-through=-opa=class | printer-pass-through=-opa=class |
| COPIES | copy-count | results-profile |
| DATAACK=UNBLOCK | data-fidelity-problem-reported=all | data-fidelity-problem-reported=all |
| DATAACK=BLOCK | data-fidelity-problem-reported=none | data-fidelity-problem-reported=none |
| DATAACK=BLKPOS | data-fidelity-problem-reported=character | data-fidelity-problem-reported=character |
| DATAACK=BLKCHAR | data-fidelity-problem-reported=position | data-fidelity-problem-reported=position |
| DATATYPE=AFP | Not applicable | document-format=modca-p |
| DATATYPE=LINE | document-format=line-data | Not applicable |
| DEPT | department-text | department-text |
| DEST | target-destination-name and printer-pass-through=-opa=destination | target-destination-name and printer-pass-through=-opa=destination |
| DUPLEX=NO | sides=1 | sides=1 |
| DUPLEX=NO | plex=simplex | plex=simplex |
| DUPLEX=NORMAL | sides=2 | sides=2 |
| DUPLEX=NORMAL | plex=simplex | plex=simplex |
| DUPLEX=TUMBLE | sides=2 | sides=2 |
| DUPLEX=TUMBLE | plex=tumble | plex=tumble |
| FCB | page-definition | ignored |
| FILEFORMAT=RECORD | new-line-option=counted-4-octet-aligned | ignored |
| FILEFORMAT=STREAM | new-line-option=lf or cr-and-lf | ignored |
| FILETYPE | ignored | ignored |

Table 11. Mappings in the Sample DCF (continued)

| | | |
|------------------------|-------------------------------------|-------------------------------------|
| FORMDEF | form-definition | form-definition |
| FORMLENGTH | form-length=nnnn.nnn | form-length=nnnn.nnn |
| FORMS | printer-pass-through=-opa=forms | printer-pass-through=-opa=forms |
| INTRAY | printer-pass-through=-obin | printer-pass-through=-obin |
| IPADDR | printer-pass-through=-opa=ipaddr | printer-pass-through=-opa=ipaddr |
| JOBID | printer-pass-through=-opa=jobid | printer-pass-through=-opa=jobid |
| JOBNAME | job-name and job-owner | job-name and job-owner |
| NAME | name-text | name-text |
| NODEID | node-id-text | node-id-text |
| OFFSETXB | x-image-shift-back | x-image-shift-back |
| OFFSETXF | x-image-shift | x-image-shift |
| OFFSETYB | y-image-shift-back | y-image-shift-back |
| OFFSETYF | y-image-shift | y-image-shift |
| OUTBIN | output-bin | output-bin |
| OVERLAYB | overlay-back | overlay-back |
| OVERLAYF | overlay-front | overlay-front |
| PAGECNT | job-page-count | job-page-count |
| PAGEDEF | page-definition | ignored |
| PRMODE=SOSI1 | shift-out-shift-in=one | ignored |
| PRMODE=SOSI2 | shift-out-shift-in=two | ignored |
| PRMODE=SOSI3 | shift-out-shift-in=three | ignored |
| PRMODE=[anything else] | ignored | ignored |
| PROGRAMMER | programmer-text | programmer-text |
| PRTQUEUE | printer-pass-through=-oprtqueue | printer-pass-through=-oprtqueue |
| RESFMT=P240 | font-resolution=P240 | font-resolution=P240 |
| RESFMT=P300 | font-resolution=P300 | font-resolution=P300 |
| ROOM | room-text | room-text |
| SEGMENTID | printer-pass-through=-opa=segmentid | printer-pass-through=-opa=segmentid |
| SHEETCNT | ignored | ignored |
| SYSOUT | printer-pass-through=-opa=class | printer-pass-through=-opa=class |
| TITLE | title-text | title-text |
| TRC | table-characters-reference | ignored |
| UCS | chars | ignored |
| USERID | user-id-text | user-id-text |

Types of control statements

There are three kinds of Control Statements in a DCF:

1. **Default statements** identify a default parameter for an `mvs_keyword` when one is not received from MVS. They consist of only an `mvs_definition`.

Note: If you include multiple Default statements that use the same `mvs_keyword`, InfoPrint only uses the last one.

2. **Global statements** identify an InfoPrint parameter that should be used on all data set submissions. This statement uses GLOBAL as the `mvs_definition` value.

Note: If you include multiple Global statements that use the same `infoprint_attribute`, InfoPrint only uses the last one.

3. **Mapping statements** match `mvs_keyword` with their InfoPrint equivalents. These statements must contain both an `mvs_keyword` and a control. If there is no Mapping statement listed in the DCF for one or more of the `mvs_keywords` and parameters that are received, InfoPrint adds those `mvs_keywords` and parameters as unchanged printer-pass-through attributes.

Notes:

- a. If you include multiple Mapping statements that use the same `mvs_definition` but map to different `infoprint_attributes`, all of them will be honored.
- b. If you include multiple Mapping statements that use the same `mvs_keyword` and map to the same `infoprint_attribute`, the last one mapped will be used.
- c. If you define a Mapping statement that maps to an `infoprint_attribute` that is also used in a Global statement, and the Mapping statement is used due to the MVS keywords in a received file, the Mapping statement will override the Global statement.
- d. If no matching Mapping statement is found for a received `mvs_keyword` and parameter, it will automatically be added to the printer-pass-through parameter. A null Mapping statement can be used to throw the `mvs_keyword` away entirely. A null Mapping statement contains an `mvs_definition` and a control, but no `infoprint_definition`.

Syntax of control statements

Each Control Statement consists of three parts as described below. The entire statement must reside on a single line (it can't contain a carriage return until it is complete) and it must follow this syntax:

```
mvs_definition [control [infoprint_definition]]
```

mvs_definition: The `mvs_definition` identifies a keyword that is generated by the host and, for Default and some Mapping statements, its associated parameter. It follows this format:

```
mvs_keyword[=mvs_parameter]
```

Note: In Control Statements, `mvs_definitions`, controls, and `infoprint_definitions` themselves cannot contain any white space (spaces or tabs). The first occurrence of white space separates the `mvs_definition` from the control and the second separates the control from the `infoprint_definition`. As a result, if the elements contain white spaces, the DCF will not complete the mapping correctly.

These values are described below.

mvs_keyword: The `mvs_keyword` represents the string that InfoPrint Manager receives from an MVS system. It is what the MVS system uses to refer to information about a print job (for example, whether it should be duplexed or what overlay it uses, if any). The keywords identified in Table 11 on page 152 are the

standard set of `mvs_keywords` that are available for you to use. The keywords that MVS uses to refer to these job characteristics are not the same as the InfoPrint attribute names that do the same things.

mvs_parameter: The optional `mvs_parameter` is a case-sensitive free-format field. The purpose of an `mvs_parameter` depends upon what type of Control Statement it is used with.

- **Default Statement**

The `mvs_parameter` value is required. This value identifies the default value of the `mvs_keyword` when the `mvs_keyword` has not been sent by the host system with a job. For example, in the Defaults section of the `mvsdmap.txt` file, `CHARS=GT13` is identified. Therefore, `GT13` is the `mvs_parameter` default font value, and will be used whenever InfoPrint Manager does not receive a font value from the host system.

- **Global Statement**

The `mvs_parameter` value is ignored.

- **Mapping Statement**

The `mvs_parameter` value is optional. If an `mvs_parameter` value is specified for an `mvs_keyword` on a Mapping statement, the `mvs_keyword` is not always mapped to the `infoprint_definition` specified. The `mvs_keyword` is only mapped to the `infoprint_definition` when the `mvs_keyword` and the `mvs_parameter` combination that comes from the host system matches the `mvs_keyword` and `mvs_parameter` combination specified on the Mapping statement.

For example, these four lines appear in the Mapping section of the `mvsdmap.txt` file:

```
CCTYPE :: carriage-control-type=none
CCTYPE=ANSI :: carriage-control-type=ansi-ebcdic
CCTYPE=MACHINE :: carriage-control-type=machine
CCTYPE=ASCII :: carriage-control-type=ansi-ascii
```

If InfoPrint Manager receives a job from the host system with the `mvs_keyword` `CCTYPE=ANSI` specified, InfoPrint Manager will map that keyword to the InfoPrint attribute `carriage-control-type` and set its parameter to `ansi-ebcdic`. If the next job comes with the `mvs_keyword` `CCTYPE=MACHINE` specified, InfoPrint Manager will map that keyword to the InfoPrint attribute `carriage-control-type` and set its parameter to `machine` instead. But, if InfoPrint Manager receives a job with the `mvs_keyword` `CCTYPE` set to anything besides `ANSI`, `MACHINE`, or `ASCII`, it will map that keyword to the InfoPrint attribute `carriage-control-type` and set its parameter to `none`.

For certain `mvs_keywords`, special `mvs_parameters` are recognized. These keywords are listed in Table 12.

Table 12. Special mvs_parameters

| <code>mvs_keyword</code> | <code>mvs_parameters</code> |
|--------------------------|------------------------------|
| CC | YES NO |
| CCTYPE | ANSI MACHINE ASCII |
| DATAACK | BLOCK UNBLOCK BLKPOS BLKCHAR |
| DATATYPE | LINE AFP |
| DUPLEX | NO NORMAL TUMBLE |
| FILEFORMAT | RECORD STREAM |

Table 12. Special mvs_parameters (continued)

| mvs_keyword | mvs_parameters |
|-------------|----------------|
| RESFMT | P240 P300 |
| TRC | YES NO |

control: A *control* is a symbol that is used for delineation and which can also tell the MVS Download receiver what it has to do to the *mvs_keyword* if it converts the *mvs_keyword* to an InfoPrint keyword. Every Mapping statement contains a control. Some of the controls listed below are used in the *mvsdmap.txt* file.

- :: Don't do any special processing. (Standard delineation)
- :+ Change all of the characters in the *mvs_parameter* into uppercase when converting it to an *infoprint_parameter*.
- :- Change all of the characters in the *mvs_parameter* into lowercase when converting it to an *infoprint_parameter*.
- !: Do not convert this *mvs_parameter* into an *infoprint_parameter*. This control is only necessary if no *infoprint_parameter* is specified on this statement.

Note: In Control Statements, *mvs_definitions*, controls, and *infoprint_definitions* themselves cannot contain any white space (spaces or tabs). The first occurrence of white space separates the *mvs_definition* from the control and the second separates the control from the *infoprint_definition*. As a result, if the elements contain white spaces, the DCF will not complete the mapping correctly.

Controls behave differently in the different types of Control statements.

- In **Default** statements, you cannot specify a control.
- In **Global** statements, you must specify a control, but the operator is only recognized as a delineator; no matter what operator you use, it acts like the :: control.
- In **Mapping** statements, you must specify a control.

infoprint_definition: The *infoprint_definition* identifies the attribute and parameter that will be specified on the **pdpr** command when InfoPrint Manager sends the job to the printer. The *infoprint_definition* identifies an InfoPrint attribute and (optionally) the value that it should be set to. *infoprint_definitions* follow this syntax:

```
infoprint_attribute[=infoprint_parameter]
```

Note: In Control Statements, *mvs_definitions*, controls, and *infoprint_definitions* themselves cannot contain any white space (spaces or tabs). The first occurrence of white space separates the *mvs_definition* from the control and the second separates the control from the *infoprint_definition*. As a result, if the elements contain white spaces, the DCF will not complete the mapping correctly.

The *infoprint_attribute* is the InfoPrint attribute name as it is listed in the *InfoPrint Manager: Reference* under *-x* options, plus the specially recognized *target-destination-name*, which is used to identify the *-p* option of the **pdpr** command. The *infoprint_parameter* is the value that is assigned to that attribute.

infoprint_definitions work differently in each kind of control statement.

- In **Default statements**, you cannot specify an *infoprint_definition*.
- In **Global statements**, you must specify an *infoprint_definition*.

- In **Mapping statements**, you should specify an `infoprint_definition` to map the `mvs_definition` to. However, if you specify an `infoprint_attribute`, you do not have to specify an `infoprint_parameter` with it. If you only list an `infoprint_attribute`, the `mvs_parameter` value from the `mvs_keyword` becomes the `infoprint_attribute` value.

Notes:

1. If you do not provide an `infoprint_definition` in a Mapping statement, the information contained in that **mvs_keyword** will be discarded.
 2. If you provide multiple Mapping statements that lead to the same attribute only one will be used, but it is impossible to predict which one that will be.
- To identify an `infoprint_attribute` that you want to use on the `-x` option of the `pdpr` command, omit the `-x`, for example: `media-id`.
 - To identify an `infoprint_attribute` that you want to use on the `printer-pass-through` attribute of the `pdpr` command, prefix the `infoprint_attribute` with an `-o` flag for example, `-ojobid`. All generated-`o` attributes will be collected and added to a single `printer-pass-through` attribute.
 - To identify an `infoprint_attribute` that you want to use on the `-opa` option of the `printer-pass-through` attribute of the `pdpr` command, prefix the `infoprint_attribute` with an `-opa`, for example, `-opa:class`. All generated-`opa` attributes will be collected and added to a single `-opa` keyword on the `printer-pass-through` attribute.
 - To identify that the `mvs_definition` is to map to the name of the target destination for submission, specify `target-destination-name`, which is a specially-recognized `infoprint_attribute` that overrides the third parameter that is passed to the sample MVS Download Exit.
 - To handle complex, multi-valued `infoprint_attributes`, begin the `infoprint_parameter` with as many colons (`:`) as necessary to move the parameter into the correct position. For example, the `results-profile` attribute follows this syntax:

```
-x "results-profile=name@node:method:number:'message text':bin"
```

In use, the attribute would look like this:

```
-x "results-profile=nr645@bld25:pickup:2:'Please read this'"
```

So, if you wanted to map the `COPIES` value to the 'number' parameter of `results-profile`, you would enter two colons (`::`) in the mapping statement. The two colons indicate that the program should skip over the first two parameters in the `results-profile` (`name@node` and `method`), and insert the value in the third position (`number`). The mapping statement would look like this:

```
COPIES  :: results-profile=::
```

You can include a hard-coded `infoprint_parameter` in the statement, but you do not have to. If you do not include one, the normal rules for determining the resulting `infoprint_parameter` apply.

Changing the sample DCF

Copying the sample DCF:

To create a copy of the sample DCF provided with InfoPrint Manager:

1. Open the file `<install path>\var\pd\mvsdmap.txt`, (where `<install path>` is the directory where InfoPrint Manager is installed) in a text editor such as Notepad.

2. Click **File** → **Save as**, and save the file into a directory outside of the <install path> directory. Make note of the directory and file name for reference later.

Notes:

- a. You can change the file name if you like, but do not need to.
- b. If you do not save the file to another directory outside the <install path> directory, it could be overwritten or deleted if you ever need to reinstall, apply service, or upgrade InfoPrint Manager.
- c. This step creates a copy of the sample/default file and leaves the original, unedited version in the directory listed above so you can use it to create another customized DCF later if you need to.

Editing the DCF:

See this section to edit either the sample DCF provided with InfoPrint Manager or an existing DCF.

1. Open the file you want to edit in a text editor.

Notice that most of the lines begin with a *. Every line that begins with a * is a line that is *commented out*, so InfoPrint Manager ignores it during processing. When you need to comment out a line, insert a * at the beginning of the line; to uncomment a line, delete the * at the beginning of the line.

2. Read the notes and instructions in the file before you make any changes to it.
3. Change the Control Statements as you need to.

- In the **Defaults** section, you can set the defaults as you need them to be.
- In the **Globals** section, the only value that is set is carriage-control-type attribute value.

The statements that are commented out are examples of how to specify alternate resource search orders.

- The first example specifies a location that InfoPrint Manager will search for all fonts (resource-context-font=C:\fonts\reslib).
- The second example specifies a location and search order for page definitions (resource-context-pagedef=C:\joeski\pagedefs;c:\bills\pdefs).

You should put any other pdpr parameters to be specified on the -x option on all jobs here.

- In the **Mapping** section, there are two sections: *Commonly changed mappings* and *Less commonly changed mappings*. Follow the instructions provided in the text file to make your changes, keeping these additional considerations in mind:
 - If you plan to send print jobs to different logical destinations based upon the media type of the job, you should uncomment the FORMS :: default-medium mapping.
 - The default mapping uses the MVS JCL keyword DEST to specify the target destination (printer) that the downloaded jobs are sent to. If you comment out this mapping or remove the target-destination-name from the right side, all jobs are submitted to the target destination that you specify in the **Target destination** field when you set up your MVS Download Receiver.
 - If your host MVS system uses the newer PRTQUEUE JCL keyword to identify the target-destination, comment out the DEST :: target-destination-name mapping and uncomment the lines:

```
PRTQUEUE :: target-destination-name
DEST     ::
```

Debugging your changed DCF:

The sample DCF contains a DEBUG statement that is commented out. To use this statement to check your DCF:

1. Uncomment the DEBUG statement in the DCF that you changed.
2. Save the file.
3. Stop the MVS Download receiver that uses this DCF.
4. Restart the MVS Download receiver that uses this DCF.
5. Submit a job from MVS that runs through this MVS Download receiver.
Information will be written into the server log. You can view the server log by clicking the **Server Log** item in the left pane of the Management Console.
6. Once you are satisfied with the results, open the DCF and comment the DEBUG statement out again.
7. Save the file.
8. Stop the MVS Download receiver that uses this DCF.
9. Restart the MVS Download receiver that uses this DCF.

Changing the sample DCF advanced information

If you use MVS Exit 15, understand that the predefined *mvs_keywords* are internally converted using Table 13 on page 160. To add lines to the DCF you will need to be aware of these internal mappings and what additional information your lines need to contain.

For example, the sample DCF contains the line:

```
DATACK=BLKPOS  :: data-fidelity-problem-reported=character
```

But, because in Table 13 on page 160 DATACK maps to -odatac, this line would produce the same results:

```
-odatac=blkpos  :: data-fidelity-problem-reported=character
```

When the MVS host actually sends -odatac=blkpos, this mapping statement is used. For information about the actual keywords that the MVS host sends, see the Print Services Facility™ for z/OS;MVS Download, (S544-5624) publication, which you can download from the InfoPrint Solutions Company Web site at <http://www.infoprint.com>.

Note: The *mvs_definition* (all of the information to the left of the control) is case-sensitive and must exactly match the information that comes from the host system for the mapping to be made.

Some parameter information is received from the MVS host as -o keywords and other information is received as sub-keywords of the -opa keyword. For example, CLASS information is received as -opa=c|ass=xxx.

When the DCF is processed by an MVS Download receiver, the receiver looks at each *mvs_keyword* to determine if it will be received from MVS as a keyword or as a sub-keyword of the -opa keyword. The receiver tries to convert the specified *mvs_keyword* according to Table 13 on page 160. If the receiver doesn't find a mapping conversion for the specified *mvs_keyword*, the *mvs_keyword* is left unchanged. If the result of the conversion begins with -o, the receiver assumes that the *mvs_keyword* will be received as a keyword. If the result of the conversion

does not begin with -o, the receiver assumes that the mvs_keyword will be received as a sub-keyword of the -opa keyword.

For example, the mvs_keyword SYSOUT is internally converted (according to Table 13) to class. Since class does not begin with -o, the receiver assumes that class is a sub-keyword of the -opa keyword.

Table 13. MVS keyword internal conversions

| mvs_keyword | MVS Values Passed to InfoPrint |
|--------------------|---------------------------------------|
| ACCOUNT | -AC |
| ADDRESS1 | -oaddress1 |
| ADDRESS2 | -oaddress2 |
| ADDRESS3 | -oaddress3 |
| ADDRESS4 | -oaddress4 |
| BUILDING | -obu |
| CC | -occ |
| CCTYPE | -occtype |
| CHARS | -ochars |
| CLASS | class |
| COPIES | -ocop |
| DATAACK | -odatac |
| DATATYPE | -odatat |
| DEPT | -ode |
| DEST | destination |
| DUPLEX | -odu |
| FCB | -opagedef |
| FILEFORMAT | -ofileformat |
| FILETYPE | -ofiletype |
| FORMDEF | -of |
| FORMLEN | -oformlength |
| FORMS | forms |
| INTRAY | -oin |
| IPADDR | -oipdest |
| JOBID | jobid |
| JOBNAME | -ojobn |
| NAME | -ona |
| NODEID | -ono |
| OFFSETXB | -ooffxb |
| OFFSETXF | -ooffxf |
| OFFSEYB | -ooffyb |
| OFFSEYF | -ooffyf |
| OUTBIN | -ooutbin |
| OVERLAYB | -oovlyb |
| OVERLAYF | -oovlyf |

Table 13. MVS keyword internal conversions (continued)

| | |
|------------|---------------------|
| PAGECNT | -opagecount |
| PAGEDEF | -opagedef |
| PRMODE | -oprmode |
| PROGRAMMER | -opr |
| PRTQUEUE | -oprqueue |
| RESFMT | -ore |
| ROOM | -oro |
| SEGMENTID | segmentid |
| SHEETCNT | -osheetcount |
| SYSOUT | class |
| TITLE | -oti |
| TRC | -otrc |
| UCS | -ochars |
| USERID | -ous |

MVS Exit 15 lets users add sub-keywords to the `-opa` keyword only. The `mvs_keyword` that would be used in the DCF is the (case-sensitive) sub-keyword only. For example, if an MVS Exit 15 added `OUTGRP=n`, where *n* was the number of the dataset in the job, and you wanted to map this value to the `printer-pass-through=-opa=segmentid` parameter (instead of the supplied mapping), you would replace the existing DCF mapping statement of:

```
SEGMENTID    :: -opa:segmentid
```

with

```
OUTGRP       :: -opa:segmentid
```

To add multiple sub-keywords to the `-opa` keyword using MVS Exit 15, each keyword/parameter pair must be delineated with a comma. It is highly recommended that you not use any blank spaces or tabs around the comma or around the "=" sign that you place between your generated sub-keyword and the parameter.

For more information, see the Print Services Facility for z/OSMVS Download, or Print Services Facility for z/OS: AFP Download Plus publication, which you can download from the InfoPrint Solutions Company Web site at <http://www.infoprint.com>.

Understanding the MVS Download Exit Program

The MVS Download Exit Program (or *Exit*) takes the InfoPrint Manager submission parameters generated by the DCF and uses them to process the print job appropriately. The Exit is invoked once per file received from MVS.

A sample exit routine is provided with InfoPrint Manager: written in Microsoft Visual Studio 2005. The Visual Studio file set includes: `mvsdsubm.dsp` and `mvsdsubm.opt` (project files), `mvsdsubm.dsw` (a workspace file), and `mvsdsubm.c` (a source file). They are installed in the `<install path>\exits\mvdsd` directory, where `<install path>` is the directory that you installed InfoPrint Manager in.

Using the sample MVS Download exit program

In the sample `mvdsdsubm` files, the Exit performs these operations using the eight parameters that are passed to it.

1. Issues a `pdpr` print command to submit the file (parameter #1) to the specified target destination (parameter #3), with the indicated InfoPrint print parameters (parameter #5).
2. If the job prints successfully, the Exit will erase the print job file (parameter #1).
3. If the job does not print, the Exit will log an error in the MVS Download error file and terminate the receiver.

| Parameters | Definition |
|------------|--|
| #1 | The name of the file that contains data received from the MVS JES spool |
| #2 | MVS JES destination control parameters |
| #3 | InfoPrint target destination (printer) where the job is submitted |
| #4 | MVS Download receiver name |
| #5 | InfoPrint print parameters |
| #6 | The port number used by this receiver |
| #7 | Additional exit parameter specified when the receiver was created |
| #8 | Indicator that indicates whether trace is on. A value of zero indicates trace is off. Any other value indicates trace is on. |

In addition, the Visual Studio exit has support for the multiple data set function in MVS Download and AFP Download Plus.

Customizing the sample exit program

You can customize the `mvdsdsubm.c` to allow the Exit to perform differently. For example, you might want to modify the Exit so that it ignores the InfoPrint Manager print parameters (parameter #5) and processes only the MVS JES destination control parameters themselves (parameter #2). Or, you could remove the `pdpr` call and change it to any applicable program or OS command call. For instance, you could have the Exit copy or archive the data file (parameter #1).

Note: If you specify a DCF that contains no statements, InfoPrint will pass parameter #5 as a null string.

Copying the sample exit:

To customize the sample Exit, you should not change the sample itself, because if you ever need to reinstall InfoPrint Manager, all of your changes will be lost. Instead, copy the fileset into a directory outside of the directory that you have InfoPrint Manager installed in and make your changes to that version.

Note: You must have access to Microsoft Visual Studio 2005 to customize the Exit.

To complete the process:

1. Log on to the system that your InfoPrint Manager server is installed on.
2. Decide which directory you would like to store your new exit in or create a new one for it.
3. Navigate to the `<install path>\exits\mvsd` directory, where `<install path>` is the directory that you installed InfoPrint Manager in, using Windows Explorer or the **My Computer** icon.

You will see four files.

4. Copy these files you want to modify into the directory you selected or created in step two.
5. Open the copy of the project and make your changes.
6. Save and compile the Exit.

Note: By default, the sample Exit builds a **Debug** compile version of the Exit. The pre-installed executable version of the sample (mvsdsubm.exe) is a **Release** version. You can change the Active Configuration of the **mvsdsubm** project to build the **Release** version of the Exit.

Changes to custom scripts/exits are only required if any of these new functions are desired:

- AFP Download Plus multiple data set
- Support for the **pdpr** retry count and retry interval
- Displaying the AFP Download Plus page count on the Admin/Operator GUI
- Printing/discarding AFP Download Plus failed jobs
- Using inline resources with MVS Download multiple data set
- Support for separator pages with AFP Download Plus multiple data set
- Using any of the Error Processing Options

If none of these functions are used, the existing custom scripts can be used.

See the current sample script/exit provided and the sample script/exit that your custom script/exit is based on to determine the changes. From this, you will identify the proper approach for updating and testing your custom script/exit.

Creating an MVS Download Receiver

Before you can begin sending jobs from the MVS JES spool to InfoPrint Manager through MVS Download, follow this procedure to set up an MVS Download Receiver.

1. Open the InfoPrint Manager Management Console.
2. On the menu bar, click **Edit** → **New** → **MVS Download Receiver**.
The **Add MVS Download Receiver** dialog opens.
3. Fill in the fields according to these specifications. For more information about the dialog and the fields it contains, see the Management Console online help.
 - **Port Number:** Enter the port number that you want this receiver to use when it communicates with the host system. This number must match the port number that is specified in the Routing Control File used by the for MVS Download FSA for this computer's IP address or the PORTNO in the PRINTDEV for the AFP Download Plus FSA.
 - **Target Destination:** Select the InfoPrint destination that you want this receiver to submit jobs to from the drop-down list. InfoPrint Manager will only submit a job to this destination when the job does not have a target-destination-name value assigned to it after its mvs_keywords have been processed against the DCF.
 - **Destination Control File:** Click **Browse** and locate the destination control file that you want to use with this receiver. Select the file and click **Save**.
 - In the **Processing Options** group box, both of the options are selected by default.

- When the **Retain command files** check box is selected, InfoPrint Manager saves all of the files that pertain to MVS Download jobs that fail in processing. When MVS Download print jobs are processed successfully, these files are cleaned up regardless of what you select here. If you need to resubmit failed jobs, you do not have to download them from the host system again; the files are still on your InfoPrint server. If you deselect this box, you will have to download any jobs that fail in processing from the host again to print them.

Note: You can diagnose errors by clicking the **Server Log** item in the left pane of the Management Console.

Operators should evaluate any processing failures, correct the problems that caused the failures, and resubmit the jobs.

For more information, see “Deleting orphan files and resubmitting jobs to MVS Download” on page 304.

- When the **Enable parallel processing** check box is selected, this MVS receiver will process multiple jobs simultaneously. When it is cleared, the receiver will wait until the Exit for one print job completes before it starts to process the next job.

This option is normally left selected unless a custom Exit has been written that requires only one instance of the exit to run at a time and in the order the files are received.

This option must be unchecked if the multiple data set function of MVS Download or AFP Download Plus is used.

- In the **Error Processing Options** group box, neither of the options are selected by default:
 - When the **Provide Extended Error Information to AFP Download Plus** check box is selected, internal errors or exit errors are reported to the host for assistance in problem determination if requested by AFP Download Plus. When the check box is cleared, neither internal errors nor exit errors are reported to the host for assistance in problem determination. To report internal error messages, you must check this box to report internal error messages. In addition, you must also check the **Provide Exit Program Errors to z/OS** check box to report exit messages. For all new and existing view receivers, the default status of the box is cleared.
 - When the **Provide Exit Program Errors to z/OS** check box is selected, the success of the exit is monitored by the receiver. A zero return code from the exit causes the receiver to indicate success to the mainframe. A non-zero return code from the exit causes the receiver to indicate failure to the mainframe. When this check box is selected and the exit reports an error on a file in an multiple data set job, the mainframe might retry the file. In addition, any error messages generated by the exit are provided to the mainframe when you check this box if the **Provide Exit Program Errors to z/OS** check box is also checked. When you do not check this box, the success of the exit is not monitored by the receiver. For all new and existing view receivers, the default status of the box is cleared.
- In the **Mapping Options** group box, neither of the options are selected by default:
 - Select **Basic**, to use a limited hard-coded conversion table.
 - Select **Custom**, to specify the **Host Code Page** and, optionally, the **Local Code Page** for conversion.
 - **Host Code Page:** Enter the name of the code page from where your JCL is submitted.

- (Optional)**Local Code Page:** Enter the name of the local code page that you want to use. If this field is left empty, the receiver queries the system code page and uses it instead.
4. (Optional) Click **Advanced** to open the **Add MVS Download Receiver Advanced** dialog. In this dialog, you can specify these options. For more information about the dialog and the fields it contains, see the Management Console online help.
- Select **Standard Exit Program Options**, to specify the **Print AFP Download Plus Jobs with Errors on z/OS**, the **Server Submission Retry Count**, and the **Server Submission Retry Interval**.

Note: These options are only functional if you are using the new InfoPrint Manager provided exit. If you are using an older InfoPrint Manager provided exit, these options will be ignored. If you are using a custom exit, consult the writer of the exit.

- If you select the **Print AFP Download Plus Jobs with Errors on z/OS** check box, and AFP Download Plus detects an error in any file in the job, the job is printed including the error messages provided by AFP Download Plus. The error messages provided by AFP Download Plus are printed where the file would normally be printed in the job. If you clear this check box and AFP Download Plus detects an error in any file in the job, the entire job is discarded. For all new and existing view receivers, the default status of the box is cleared.
 - **Server Submission Retry Count:** Enter the number of times the **pdpr** should be tried. If no value, or a value of 0 is entered, the **pdpr** is retried.
 - **Server Submission Retry Interval:** Enter the time interval in seconds between the **pdpr** retries. The value entered must be a integer from 0 to 32767. If no value or a value of 0 is entered, the **pdpr** is retried immediately.
- Select the **Custom Exit Program Options** check box, if you are using custom exits. Consult with the person responsible for the custom exits to determine whether this box should be selected.
 - **Exit Program Name:** Enter the path and filename of the custom Exit Program that you want this receiver to use. Consult with the person responsible for the custom exit program to determine the name of the exit.
 - **Additional Exit Program Parameters:** Consult with the person responsible for the custom exit program to determine the Additional Exit Parameters.
 - Click **OK** to close the **Add MVS Download Receiver Advanced** dialog.
5. On the **Add MVS Download Receiver** dialog, click **OK**.
One or more pop-up informational messages might appear; read them and click **OK** to dismiss them.
6. Select the **MVS Download Receivers** item in the left pane of the Management Console.
You should see the receiver you just created in the right pane. The receiver status might be **STOPPED** but it should start momentarily. Click **Refresh View** on the toolbar until the status changes to **RUNNING**.
If the receiver does not start within a few minutes, select **Edit → MVS Download Manager** and manually start the receiver by selecting it and clicking **Start**.

Note: Receivers that will not start more than likely have destination control file errors. You can diagnose errors by clicking the **Server Log** item in the left pane of the Management Console.

Making your AFP resources available to InfoPrint Manager

When the MVS Download feature of PSF for z/OS is used with MVS Download, the AFP resources you use for your printing jobs must be available to InfoPrint Manager, so the jobs can process correctly. When the AFP Download Plus feature of PSF for z/OS is used with MVS Download, the resources are usually sent with the print jobs and the AFP resources do not need to be available to InfoPrint Manager, and this section can be skipped. However, AFP Download Plus can be configured to not send all AFP resource types to InfoPrint Manager. If this configuration is used, the resource types not sent must be made available to InfoPrint Manager as described in this section. This section assumes that these resources currently reside on your host system in AFP format, and that you (or someone) can locate them.

Note: If you currently use the Distributed Print Function (DPF) of PSF for OS/2, the resource files you use are in Intelligent Printer Data Stream (IPDS) format. However, the Advanced Function Presentation (AFP) versions of those files exist on your host system as well. Make sure that you use the AFP versions with MVS Download.

There are several ways that you can make your resources available to InfoPrint Manager; three of them are described below. Read through the options and decide which is best for your configuration.

Manually transfer the resources from the host to your Windows system

You can move your resources directly from your host system using any method you like, though the most common is ftp. If you decide to ftp your files, make sure that you transfer the files as *binary* data, not as *text*. In general, the steps you should follow are:

1. Create a directory on your Windows system that will receive your resources.
2. ftp your resources to that directory as binary data.
3. Identify that directory to InfoPrint Manager.

You can either identify the directory using a resource context object or by changing the default resource search path in the Management Console. For information about changing the default resource search path, consult the online help for the Management Console under **Service Configuration**.

This method is effective and relatively easy to implement. However, every time you change your AFP resources, you will have to ftp them to the correct directory on your Windows system. If you do not change your resources often, this method might work well for you. If you change your AFP resources often, you might want to consider a different option.

Store your resources in a central location

Another option is to store your AFP resources on any machine in your network (including the host system that they currently reside on), and NFS mount a directory on the Windows system that your InfoPrint Manager server is installed on to that machine. Then, identify that directory to InfoPrint Manager just as in the option above (either by using a resource context object or by changing the default

resource search path). To implement this option, you will need to install NFS server and client software, which is available from a variety of vendors.

The main drawback to this solution is that it generates a significant amount of network traffic as the system retrieves the resources. The increase in traffic and time needed to retrieve the resources when needed could cause printer clutching.

Move the resources using MVS Download

A third option is to move your AFP resources using the MVS Download feature of InfoPrint Manager itself. You can achieve this by setting up a MVS Download receiver that receives jobs and copies them into a particular directory without printing them. You would only use this receiver to move your resources. Setting up this configuration is different depending on your environment. Each time you modify a resource, you submit a job that sends the modified resource to each system that you are running an InfoPrint Manager server on. To accomplish this task, you might need to customize the JES inish deck, the Host MVS Download routing control data set, the Destination Control File (DCF), and the Exit Program. The modifications needed will depend on your existing MVS Download configuration used for sending jobs, although the process of getting the AFP resources to the InfoPrint Manager computer is the same in all cases:

1. Place the resource on the spool for MVS Download to process with identification that it is an AFP resource, the resource name, and the desired target path. (Target path is optional)
2. Set up the routing control data set to send the AFP resources to unique MVS Download receivers on the InfoPrint Manager system. (Optional)
3. Set up the routing control data set to not prefix each record with a record length field for AFP resources.
4. Set up the DCF to map the desired resource path/name to the target-destination-name. (Optional)
5. Modify the supplied Exit to copy the received AFP resource into the proper resource directory with the provided resource name. The full functions of this Exit would depend on the options chosen above. For example:
 - a. If the target path was not supplied, the Exit would either need to have it hardcoded or determine it using other means.
 - b. If both AFP resources and print jobs are being sent to the same receiver, the exit would need to distinguish between the two by some mechanism and take the proper action for each.
 - c. If the DCF does not map the resource path/name to the target-destination-name, it will either need to parse it from the other parameters or determine it using other means.

This option is more difficult to set up than the other two, but is less time consuming once you have it implemented, because every time you change your AFP resources all you have to do is resubmit a job for transmission to your Windows systems. If you have multiple Windows systems to update or can further automate this process, this method might work well for you. One possible configuration example follows.

Example: Assume that JES is configured to schedule all jobs with DEST=NTPRT1 to an MVS Download FSA that downloads them to an InfoPrint Manager system that then uses the default supplied DCF and Exit to submit the jobs to an IPDS printer, **ntprt1**. The MVS Download FSA uses a routing control data set that contains this statement:

```
DEST=NTPRT1
IPADDR=dept01.myststem
PORTNUM=5002
RETRYNUM=3
RETRYINTV=60
```

We have decided this about the configuration:

- Leave the existing MVS Download receiver (on our Windows system) alone.
- Create a new receiver to processes the AFP resources, but continue using the existing MVS Download FSA.
- Pass only the AFP resource name, not the directory path for it to be stored in.
- Use the FORMS keyword to identify the job as an AFP resource since the Routing Control Statements can use FORMS to direct files to different receivers.
- Use the NAME JCL keyword to identify the AFP resource name.

In the JCL job for putting modified AFP resources on the spool, we have an OUTPUT statement with:

```
OUTPUT    DEST=NTPRT1,FORMS=AFPRES,NAME='COMFYNT.300',....
```

No changes to the JES inish deck are required since the MVS Download FSA already receives jobs with DEST=NTPRT1.

We change the routing control file as follows to send this job to a separate receiver and to prefix these resources with no length field. Jobs that do not have FORMS=AFPRES would continue to be sent to the existing receiver.

```
DEST=NTPRT1
FORMS=AFPRES
IPADDR=dept01.mysystem
PORTNUM=5003
SEND_REC_LENGTH=NO
RETRYNUM=3
RETRYINTV=60
DEST=NTPRT1
IPADDR=dept01.myststem
PORTNUM=5002
RETRYNUM=3
RETRYINTV=60
```

Now we need to define a new receiver on the dept01.mysystem machine. The new receiver will use port number 5003 (as identified in the routing control statement), a modified DCF, and a user-written Exit.

We make a copy of the supplied DCF and modify it to change the mapping of the NAME keyword from MVS. The existing statement:

```
NAME      :: name-text
```

would be changed to:

```
NAME      :: target-destination-name
```

Also, the existing statement that maps DEST to target-destination-name would be commented out as follows:

```
* DEST    :: target-destination-name
```

Due to this change in the DCF, the Exit will now receive the AFP resource name as the third passed parameter.

Next, we make a copy of the supplied Exit. We modify the Exit so it copies the received file instead of submitting it to InfoPrint Manager using pdpr. The Exit must use the first passed parameter as the name of the resource file and the third passed parameter to derive the target resource file name, because the DCF mapped it that way. Since we did not pass the desired resource directory name in the JCL, the Exit needs to determine the drive and directory and pre-pend it to the target resource file name. Since this Exit will only be used on a receiver that receives AFP resources, it doesn't need to identify the file as an AFP resource and have a paths for both copying resources and submitting non-resources to InfoPrint Manager to be printed. The Exit can also be coded to detect and react to error situations as appropriate.

Lastly, we use the Management Console to create the receiver that will use the DCF and Exit that we created. In this example, the **Target Destination** that we specify when we create the receiver is irrelevant and will only be passed to the Exit if no NAME is specified in the JCL that submitted the resource.

Submitting multiple data set jobs

MVS Download and AFP Download Plus send each JES SYSOUT data set separately to the MVS Download receiver on Windows. By default, the receiver spools each data set as a separate file. On MVS, a job can contain multiple data sets. Use this procedure to customize your installation for MVS Download multiple data set job support, so that the data sets in a job sent to InfoPrint Manager through MVS Download print in sequence, with no intervening files, no NPRO processing between files, and only one header and trailer page for the set.

InfoPrint Manager now enables multiple data sets to be received, individually transformed by ACIF into MO:DCA-P, and then combined into a single file and spooled. InfoPrint Manager uses the medium maps (copy groups) from the form definition that is associated with each data set to build a comprehensive inline form definition that it inserts at the beginning of the combined file.

Use these procedures to install and configure MVS Download support for printing multiple data set jobs.

- "Requirements to use multiple data set support"
- "Installing multiple data set support with MVS Download" on page 170
- "Limitations of multiple data set support" on page 171
- "Technical description of multiple data set support" on page 172

Requirements to use multiple data set support

To support the printing of multiple data sets in a job as a single unit using MVS Download, you must:

- Install a special MVS Download user exit 15 program on MVS.
- Create a MVS Download Receiver on your InfoPrint Manager system with parallel processing turned off.

To support the printing of multiple data sets in a job as a single unit using AFP Download Plus, you must:

- Install AFP Download Plus with APAR OA15317.
- Set the **dataset-grouping** parameter in the control statement data set to Yes.
- Create an MVS Download Receiver on your InfoPrint Manager system with parallel processing turned off.

The sample user exit 15 program (**apsux15m**) provided with MVS Download, adds a parameter that identifies data sets that belong to multiple data set jobs and indicates whether the data set is first, next, or last in a job.

Turning off parallel processing ensures that the MVS Download receiver receives the data sets in the correct sequence by creating only one child process. If parallel processing is turned on, MVS Download can create more than one child process, and thus can receive more than one data set from a multiple data set job at the same time. Data sets could be received out of order and might not print correctly.

Note: Make sure you have set up your shared resources so that MVS Download can find them.

Installing multiple data set support with MVS Download

Use this procedure to install the MVS Download multiple data set support.

1. Install the MVS Download user exit 15 program, **apsux15m**, on MVS. The program must be assembled and linked into a data set referenced in the **STEPLIB** of your MVS Download startup **PROC**.
2. Run MVS Download on MVS using **SEND_REC_LENGTH=YES** either by specifying it explicitly in the MVS Download Routing Control data set on MVS or by allowing it to default. If you specify **SEND_REC_LENGTH=NO**, ACIF might be unable to process some variable length line mode data. In these cases, ACIF issues a message that it cannot read the input file with a return code of 310.
3. Make sure that ACIF can locate your resources. It looks in the directories specified in the **Service Configuration** dialog of the Management Console. If you specify resource directories using any of these attributes, you must specify those same directories in the **Default resource search path** field in the **Service Configuration** dialog of the Management Console:
 - **resource-context**
 - **resource-context-font**
 - **resource-context-overlay**
 - **resource-context-page-segment**
 - **resource-context-page-definition**
 - **resource-context-form-definition**

You must delimit each directory using a semicolon (;), not a colon (:).

4. Do not specify these attributes either directly or in Initial Value Job or Initial Value Document objects:
 - **transform-message-file-name**
 - **resource-context-page-definition**
 - You can use the **resource-context** attribute instead of the **resource-context-page-definition** attribute.
5. Make sure that all of the receivers you plan to use have parallel processing turned off. If parallel processing is enabled, you cannot use those receivers with multiple data set jobs. To see the status of parallel processing:
 - a. Open the Management Console and click the MVS Download Receivers item in the left pane.

A list of receivers appears in the right pane.
 - b. Double-click each receiver to open the **Viewing** dialog.
 - c. In the **Processing Options** box, see if **Parallel Processing** is enabled. If it is enabled, you cannot use that receiver with multiple data set jobs.

Installing multiple data set support with AFP Download Plus

Use this procedure to install the AFP Download Plus multiple data set support.

1. Install AFP Download Plus with APAR OA15317. To enable the multiple data set function, set the **dataset-grouping** parameter in the control statement data set to **Yes**. For more information about installing AFP Download Plus, see the "Installing AFP Download Plus" chapter in *Print Service Facility for z/OS: AFP Download Plus*, S550-0433. Using the MVS Download exit 15 program to enable multiple data set on AFP Download Plus is not supported.
2. Do not specify these attributes either directly or in Initial Value Job or Initial Value Document objects:

- **transform-message-file-name**
- **resource-context-page-definition**

You can use the **resource-context** attribute instead of the **resource-context-page-definition** attribute.

3. Make sure that all of the MVS Download receivers that you plan to use have parallel processing turned off. If parallel processing is enabled, you cannot use those receivers with multiple data set jobs. To see the status of parallel processing:
 - a. Open the Management Console and click the **MVS Download Receivers** item in the left pane. A list of receivers appears in the right pane.
 - b. Double-click each receiver to open the **Viewing** dialog.
 - c. In the **Processing Options** box, see if **Parallel Processing** is enabled. If it is enabled, you cannot use that receiver with multiple data sets.

Limitations of multiple data set support

This support has these limitations:

1. You cannot use custom MVS Download exits on Windows with this function—you must use the sample exit that comes with InfoPrint Manager.
2. This solution applies only to line mode, mixed mode, or MO:DCA-P data sets.
3. You cannot have inline resources with the same name and different content in the same job, except for page definitions and form definitions.
4. The **job-page-count** attribute includes the separator pages when the host separator page is enabled, but the separator pages are not included in the **job-page-count** for any other jobs.
5. When the separator page support is enabled in the host but the data set does not contain the separator page, the receiver will print the job with InfoPrint Manager separators. In order to suppress the InfoPrint Manager separators, you can perform one of the following options:
 - Change the scripts/exits to set the **auxiliary-sheet-selection** job attribute to **none** permanently.
 - Set the **printer-start-sheet**, **printer-separator-sheet**, and **printer-end-sheet** job attributes to **none** for the actual destination.
 - Set the **auxiliary-sheet-selection** job attribute to **none** for the logical destination.
6. You must disable parallel processing when you create the MVS Download Receiver, so that it only receives one data set at a time. You cannot change processing options on existing receivers. As a result, you will have to delete and re-create any receivers that have parallel processing enabled.

7. You must have enough disk space on the Windows system to receive and transform all of the data sets in a multiple data set job. If you do not use this solution, data sets might be received and transformed individually, so less space might be required.
8. This solution does not create three types of form definition (**FORMDEF**) statements in the generation of a comprehensive inline form definition:
 - MSU (Map Suppression)
 - PFC (Presentation Fidelity Control)
 - MFC (Medium Finishing Control)
 - PEC (Presentation Environment Control)
 - MDR (Map Data Resource)

Note: If you enable multiple data set support using MVS Download, and you need to configure multiple MVS Download FSA's, you must have one receiver for each Download FSA that is submitting jobs to the InfoPrint Manager server. If you don't do this and two MVS Download FSA systems send jobs at the same time, the job data sets can become intermingled and errors or incorrect output can result. This restriction does not apply to AFP Download Plus. Multiple AFP Download Plus FSAs can be enabled for multiple data set and use one receiver.

Technical description of multiple data set support

This describes the sequence of the multiple data set support.

1. The MVS Download receiver receives a data set into a file.
2. The MVS Download receiver invokes the InfoPrint Manager sample exit to spool the file. (You associated the sample exit with this receiver when you created it.)
3. If MVS user exit 15 or AFP Download Plus marked the file as part of a multiple data set job, the sample exit does not immediately spool the file. Instead, the sample exit calls a second program, which invokes ACIF to transform the file into MO:DCA-P if it is from MVS Download.
4. After the last file in a multiple data set job is received and transformed to MO:DCA-P for MVS Download, the sample exit invokes the **afpconcat** program to create one file with a comprehensive inline form definition and all the MO:DCA-P documents. The **afpconcat** program can combine the multiple MO:DCA-P files received from MVS Download into a single MO:DCA-P file. The comprehensive inline form definition contains medium maps (copy groups) from all of the form definitions associated with the individual data sets. The **formdefs** requested for each input file are merged into a single combined **formdef** that is placed inline in the output MO:DCA-P document.
5. If medium map names collide, the **afpconcat** program assigns unique names and updates references in the MO:DCA-P documents.
6. The **afpconcat** program merges the inline resource group, discarding page definitions and the original form definitions. Resources with matching resource names and types are compared to verify that they are identical.
7. The sample exit spools the combined MO:DCA-P file.

Displaying the page count for your MVS Download jobs

To be able to see the page count for your MVS Download jobs listed in the InfoPrint Manager GUI, you must install the multiple data set support as described in "Submitting multiple data set jobs" on page 169. All of the requirements and limitations apply, even if you do not plan to use multiple data set support.

To be able to see the page count for your AFP Download Plus jobs listed in the InfoPrint Manager GUI, you can either turn on multiple data set support, or you can turn on page-accounting-support in AFP Download Plus.

Performance considerations with the Direct Download method

The performance of the download receiver/daemon on the InfoPrint Manager server decreases when using the **Direct download** function. The **Direct download** support can be enabled or disabled from the host (see **AFP Download Plus** guide for further reference).

Note: When enabled, there is an impact upon the throughput of the file from the beginning of file reception across TCP/IP until first page is printed. Also, the CPU and disk usage may increase during the operation.

The memory usage is not expected to be affected.

Using **Direct download** causes additional temporary files in the download working directory. You must ensure that you have sufficient space in the file system where the download working directories reside. No additional file system space is required.

Chapter 23. Using the Distributed Print Facility (DPF)

See these sources for information about using DPF to manage and control printing from the host console:

- "Planning to print from host systems" in the *InfoPrint Manager for Windows: Introduction and Planning Guide*.
- "Preparing InfoPrint Manager to connect to your host system" in *InfoPrint Manager for Windows: Getting Started*.
- "Create/change/view DPF Host Receiver" topic in the online Help for the InfoPrint Manager Management Console.

Part 4. Administrative Procedures: Customizing for Special Jobs

Chapter 24. Working with transforms

InfoPrint Manager provides transform programs for these data streams:

- Printer control language (PCL)
- PostScript
- Portable document format (PDF)
- Tag image file format (TIFF)
- Joint photographic experts group (JPEG)
- Graphic interchange format (GIF)
- Line (ASCII, both formatted and unformatted)
- Double Byte text stream
- Personalized Print Markup Language (PPML)
- Extensible Markup Language (XML)

These transforms also support color management:

- ps2afp
- jpeg2afp
- tiff2afp
- gif2afp

The transforms convert the incoming data stream into the Advanced Function Presentation (AFP) format.

When a job in any of these formats is submitted to print on a PSF printer, InfoPrint Manager automatically invokes the appropriate transform. You can also run the transforms from the **Command Prompt** window without printing the generated output. You might find this useful if you intend to print the job later. You can also use these transforms in transform objects and transform-sequences associated with actual destinations. For more information about this function, see “Configuring transforms” on page 211. Jobs print more quickly if they have already been transformed.

Most transforms have flags or option keywords that you can use to specify processing information. For a list of the flags or options and values for each transform, see the *InfoPrint Manager: Reference*. Configuration files, environment variables, and user-exit programs allow you to specify processing information for InfoPrint Manager to use when it invokes the transform automatically. You can also use configuration files and environment variables instead of typing flags on the command line whenever you run a transform.

This section consists of these:

- “Customizing the PCL, PostScript, and PDF transforms” on page 180
- “Customizing the img2afp transform” on page 186
- “Customizing the TIFF, JPEG, and GIF transforms” on page 189
- “Working with the transform for line data” on page 190
- “Working with the transform for double byte text streams” on page 195

Note: For information about the fonts used with the double-byte (**db2afp**) transform, see Chapter 27, “Working with fonts,” on page 227.

- “Working with the InfoPrint PPML transform program” on page 197
- “Working with the XML transforms” on page 199
- “Color management resource transform support” on page 206

Customizing the PCL, PostScript, and PDF transforms

You can customize the transforms for PCL, PostScript, and PDF data by specifying values in the transform configuration files. Table 14 shows the default configuration files that InfoPrint Manager provides.

In the table, *install_path* is the directory that InfoPrint Manager is installed in. If you don’t know the install path, you can find it in the **Management Console**. Open the Management Console, click **Edit -> Change Service Configuration** and find the **Install path** field.

You can either modify these files or create your own.

Table 14. InfoPrint Manager transforms and configuration files

| Data Stream | Transform | Configuration File | Daemon Configuration File |
|-------------|-----------|---|--|
| PCL | pcl2afp | <i>install_path</i> \pcl2afp\pcl2afp.cfg | <i>install_path</i> \pcl2afp\ pcl2afpd.cfg |
| PostScript | ps2afp | <i>install_path</i> \ps2afp\ps2afp.cfg | <i>install_path</i> \ps2afp\ps2afpd.cfg |
| PDF | pdf2afp | <i>install_path</i> \ps2afp\ps2afp.cfg | <i>install_path</i> \ps2afp\ps2afpd.cfg |

The PostScript and PDF transforms use the same default configuration files.

Sample configuration file

This is an example of a configuration file for the PostScript and PDF transforms. The configuration file for the PCL transform is similar.

```
# ps2afp configuration file
# KEYWORD                ps2afp FLAG          PURPOSE
#####                  #####              #####
port = 8251                # -P                which TCP/IP port to use
server = 127.0.0.1         # -S                server to connect with
ps_job_timeout = 20       # -j                maximum number of minutes
                           #                    to process PostScript job
ps_server_timeout = 20    # -s                maximum number of minutes
                           #                    server waits between jobs
ps_width = 8.5i           # -w                width of generated image
ps_length = 11i           # -l                length of generated image
ps_x_offset = 0i          # -x                left and right margins
ps_y_offset = 0i          # -y                top and bottom margins
ps_resolution = 600       # -r                resolution of printer
ps_output_type = I01_G4   # -a                type of AFP image to
                           #                    generate
```

The configuration file uses keyword equivalents of the transform flags. For the keywords and values that you can specify in the configuration file, see *InfoPrint Manager: Reference*.

Daemon configuration files

The PCL, PostScript, and PDF transforms all require a daemon to be running before you can use them. The **pcl2afpd** daemon manages the PCL interpreter portion of the **pcl2afp** transform. The **ps2afpd** daemon manages the PostScript interpreter portion of the **ps2afp** and **pdf2afp** transforms. For more information about these daemons, see *InfoPrint Manager: Reference*.

Each daemon, like the corresponding transform, uses a configuration file. The daemon configuration file can contain the same keywords as the transform configuration file (except **server**), plus some keywords that control the operation of the daemon. For the daemon keywords, see the *InfoPrint Manager: Reference*.

Hierarchy of transform options

InfoPrint Manager assigns a hierarchy to its use of flags and configuration file information when it runs the PCL, PostScript, or PDF transform program. This lists the order in which InfoPrint Manager uses flags and information specified in configuration files:

1. Any values you specify on the command line, including values in the configuration file you specify with the **-C** flag.
InfoPrint commands process flags from left to right. If you enter the same flag more than once, InfoPrint Manager uses the last occurrence of the flag to determine the value to use. For example, if you enter this command:

```
ps2afp -Cconfig.file -r240 -r300 myfile.ps
```


the **ps2afp** command transforms the file using 300-pel resolution. InfoPrint Manager ignores the resolution value specified in the configuration file `config.file` as well as the first **-r240** flag and value.
2. Values specified in the **pcl2afp.cfg** or **ps2afp.cfg** configuration file in the current directory, if one exists and if you enter the transform command directly. InfoPrint Manager ignores values in the current directory if you invoke the transform command indirectly by submitting a job to print.
3. Values specified in the **pcl2afp.cfg** or **ps2afp.cfg** configuration file in your home directory, if one exists.
4. Values specified in the default transform command configuration file named in "Sample configuration file" on page 180.
5. Values specified in a customized configuration file identified with the **-C** flag of the **pcl2afpd** or **ps2afpd** command when the transform daemon started.
6. Values specified in the default transform daemon configuration file named in "Sample configuration file" on page 180.
7. Default values that are built into InfoPrint Manager. These are the same as the transform defaults except that the default PostScript or PDF output type is an IM1 uncompressed image.

Stapling and punch options available from the ps2afp transform

You can use the **ps2afp** transform to specify both staple and punch finishing options. To use this support, you must:

1. Make sure that the IPDS (Intelligent Printer Data Stream) capable printer supports either staple or punch finishing options.
2. Make sure that the PostScript input file contains either staple or punch information.

3. Make sure that the keyword **finishing** is assigned to the **device_controls** option in the **ps2afpd.cfg** configuration file, as shown in the bold-faced example in Figure 11 on page 183.
4. Make sure that the application or driver that generated the PostScript supports the subset of staple or punch operations enabled in the **ps2afp** transform. See “Staple and punch operations supported by the ps2afp transform” on page 183 for a list of these staple and punch options.

If you are interested in using this finishing support, the PostScript drivers available with these printers contain this support. You can specify these InfoPrint printers as TCP/IP:

- InfoPrint 2085
- InfoPrint 2105
- InfoPrint 2060ES
- InfoPrint 2075ES
- InfoPrint 2090ES
- InfoPrint 2105ES

Specifying finishing in the ps2afpd.cfg file

This shows how you can specify finishing values in the **ps2afp** data stream transform:

1. From a command line, access the **ps2afpd.cfg** file that is in either the **/usr/lpp/psf/ps2afp/** directory on an AIX server or the **install_path\ps2afp** folder on a Windows server.
2. Using your editor of choice, edit the file.
3. Find the heading **#ENABLING STAPLING OR PUNCH FINISHING OPTIONS THROUGH THE TRANSFORM** and remove the hash mark (#) that comments out this line:
`device_controls=finishing`
4. Save and close the file.

Notes:

1. The **device_controls** option also accepts bin numbers and **plex** key words.
2. If you omit **plex**, the **ps2afp** transform creates duplex output.
3. If you omit bin numbers, the **ps2afp** transform creates output that indicates that the first input tray should be used.
4. Not all printers support using the staple and punch options that the **ps2afp** transform generates. If you send a document with staple or punch operations to an IPDS printer that does not support the request, InfoPrint Manager issues a message and completes the job, without either staples or punch holes. Refer to your printer documentation to determine which (if any) staple or punch operations are available.

For further examples, see the **ps2fpd.cfg** file shipped with the latest version of InfoPrint Manager, which includes the **device_controls** option.

```

# ps2afpd configuration file
# KEYWORD          EQUIVALENT ps2afp FLAG          PURPOSE
#####

port = 8251          #          which TCP/IP port to use

work_directory = /var/psf/ps2afp
#          directory to put work files into
log_file = /var/psf/ps2afp/ps2afpd.log
#          where to write log messages

notify = root       #          who to notify if problems encountered
mail_command = /usr/bin/mail
#          program used to send notifications
ps_program = /usr/lpp/psf/bin/ps2afpi
#          name of PostScript interpreter program
ps_init_file = /usr/lpp/psf/ps2afp/ps2afpe.ps
#          name of PostScript interpreter
#          initialization file
ps_files_path = /usr/lpp/psf/ps2afp :\
                /usr/lpp/psf/config
#          path to search for jobInit files
:
:
:
#####

# ENABLING STAPLING OR PUNCH FINISHING OPTIONS THROUGH THE TRANSFORM
# If you want to use the stapling or punch finishing options and have
# ensured that your PostScript driver supports these options,
# use the following options:

device_controls=finishing

```

Figure 11. Sample PostScript Daemon configuration file sections with staple and punch options

Staple and punch operations supported by the ps2afp transform

These tables list the subset of PostScript information transformed to Advanced Function Presentation (AFP) MO:DCA-P structured fields and triplets to support staple and punch operations. The changes described below should only be performed by someone with extensive knowledge of the PostScript language, such as someone writing their own PostScript driver.

The << /Staple 3 information below is a particular example drawn from Table 15 on page 184 and Table 16 on page 184. Both tables contain pertinent information for adding stapling operations to your PostScript data stream.

```

{ << /Staple 3 /StapleDetails << /Type 17 /Position 17 >> >> setpagedevice }
{ << /Staple 3 /StapleDetails << /Type 17 /Position 18 >> >> setpagedevice }

```

This example indicates that the printer will place two staples at the top of a page, whether the page has either a Portrait or a Landscape orientation.

/Staple 3

The key that introduces the StapleDetails Dictionary.

/Type 17

A required key reserved for future use.

/Position

A key that indicates the placement of the staples, using the settings displayed in Table 16.

The << /Punch 4 information below is a particular example drawn from Table 17 on page 185, Table 18 on page 185, and Table 19 on page 186. All three tables contain pertinent information for adding stapling operations to your PostScript data stream.

```
{ << /Punch 4 /PunchDetails << /Type 7 /HoleType 0 /Pattern 0 /Position 1 >> >> setpagedevice }
{ << /Punch 4 /PunchDetails << /Type 7 /HoleType 0 /Pattern 0 /Position 5 >> >> setpagedevice }
```

This example indicates that the printer will place a punch on the left side of a page, whether the page has either a Portrait or a Landscape orientation.

/Punch 4

The key that introduces the PunchDetails Dictionary.

/Type 7

A required key reserved for future use.

/Pattern 0

A key that indicates the default punch setting, using the settings displayed in Table 19 on page 186.

Note: Most PostScript drivers use /Pattern 0 because Finishers tend to have one particular setting. /Pattern 0 works with all Finishers. If you specify /Pattern 6 in the PostScript driver and your Finisher only supports two-hole punch, InfoPrint Manager will print the job and generate an error message without performing the finishing.

/Position

A key that indicates the placement of the staples, using the settings displayed in Table 18 on page 185.

Table 15. Default staple locations

| Staple | Key name | PostScript Staple |
|---------------|---------------|-------------------|
| Do not staple | None | /Staple 0 |
| Staple | Not supported | /Staple 3 |

Table 16. Additional PostScript staple details

| Staple details | Key name | PostScript staple details |
|------------------------|----------------|---|
| Do not staple | None | Portrait: /Position 0 Landscape: /Position 0 |
| Single left diagonal | LeftDiagonal | Portrait: /Position 1 Landscape: /Position 5 |
| Single left horizontal | LeftHorizontal | Portrait: /Position 3 Landscape: /Position 7 |

Table 16. Additional PostScript staple details (continued)

| | | |
|-------------------------|-----------------|---|
| Single left vertical | LeftVertical | Portrait: /Position 2 Landscape: /Position 6 |
| Single right diagonal | RightDiagonal | Portrait: /Position 9 Landscape: /Position 13 |
| Single right horizontal | RightHorizontal | Portrait: /Position 11 Landscape: /Position 15 |
| Single right vertical | RightVertical | Portrait: /Position 10 Landscape: /Position 14 |
| Double left | DoubleLeft | Portrait: /Position 4 Landscape: /Position 8 |
| Double right | DoubleRight | Portrait: /Position 12 Landscape: /Position 16 |
| Double top | DoubleTop | Portrait: /Position 17 Landscape: /Position 18 |
| Booklet | Booklet | Portrait: /Position 20 Landscape: /Position 20 |

Table 17. Default punch locations

| Punch | Key name | PostScript Punch |
|--------------|---------------|------------------|
| Do not punch | None | /Punch 0 |
| Punch | Not supported | /Punch 4 |

Table 18. Additional PostScript punch details

| Punch details | Key name | PostScript punch details |
|---------------|-----------|---|
| Do not punch | None | Portrait: /Position 0 Landscape: /Position 0 |
| Left | PunchLeft | Portrait: /Position 1 Landscape: /Position 5 |

Table 18. Additional PostScript punch details (continued)

| | | |
|--------|-------------|---|
| Top | PunchTop | Portrait: /Position 3 Landscape: /Position 7 |
| Right | PunchRight | Portrait: /Position 2 Landscape: /Position 6 |
| Bottom | PunchBottom | Portrait: /Position 4 Landscape: /Position 8 |

Table 19. Punch Setting for the /Pattern value

| Punch | Key Name | PostScript Punch Details |
|---------|----------|--------------------------|
| Default | Punch* | /Pattern 0 |
| 2-holes | Punch*2 | /Pattern 6 |
| 3-holes | Punch*3 | /Pattern 5 |
| 4-holes | Punch*4 | /Pattern 7 |

Customizing the img2afp transform

The **img2afp** transform can be used to transform color (FS45) images into monochrome bilevel (FS10) images for printing. This transform is valuable for transforming color images so that they print well in black-and-white. You can customize the **img2afp** transform only by specifying options on the command line. Unlike other transforms shipped with the InfoPrint Manager, this transform is not invoked automatically. Instead, you must specify it at the command line to preprocess the data before printing. For specific information about the syntax and use of this command, see *InfoPrint Manager: Reference*.

While you can create an **img2afp.cfg** file, InfoPrint Manager supplies a series of **img2afp.cfg** configuration files that are based on the printer model. For example, the **img2afp.4000-708cfg** file on an InfoPrint Manager for AIX server contains these settings:

```
#img2afp InfoPrint 4000-708 configuration file

a=fs10
respath=./usr/lpp/psf/config
thresh=4000-708.ibm1061pi.ta.ps
gcorr=4000-708.ibm1061pi.tf.dt.ps
pagetype=page
v=yes
r=600
```

On an InfoPrint Manager for Windows server, the **respath** value should be set to the path where the **img2afp** configuration files is located in: *install_path\config*

where *install_path* is the fully qualified path where InfoPrint Manager for Windows is installed on your system.

In each device-specific configuration file, only the **thresh** and **gcorr** values change

`img2afp.cfg` files observe these basic rules:

Note:

1. Any item specified in a configuration file can be overridden on the command line.
2. Configuration file syntax is *attribute = value*.
3. A hash mark (#) indicates a comment to the end of the line.
4. All attribute names are the same as the command-line names.
5. For options that do not take values, you must type `yes` in the configuration file (as shown below).

```
#sample img2afp configuration file
```

```
v = yes #equivalent to -v flag
```

```
a = fs10 #bilevel output
```

To invoke the transform from the command line, you must specify at least:

- **-a fs10** to indicate bilevel output .
- **-thresh {name}** to specify the PostScript level 3 halftone dictionary that you are using.

When you install some printers with InfoPrint Manager, the product makes PostScript level 3 halftone dictionaries available on your server. For example, on a Windows server an InfoPrint HD1-HD2, HD3-HD4, HD5-HD6, HS1, HS3, MD1-MD2, MS1, PS-1, or PD1-PD2 4100 printer provides these:

- `/usr/lpp/psf/config/4100.ibm71lpi.ta.ps`
- `/usr/lpp/psf/config/4100.ibm71lpirot90.ta.ps`
- `/usr/lpp/psf/config/4100.ibm85lpi.ta.ps`
- `/usr/lpp/psf/config/4100.ibm85lpirot90.ta.ps`
- `/usr/lpp/psf/config/4100.ibm106lpi.ta.ps`
- `/usr/lpp/psf/config/4100.ibm106lpirot90.ta.ps`
- `/usr/lpp/psf/config/4100.ibm141lpi.ta.ps`
- `/usr/lpp/psf/config/4100.ibm141lpirot90.ta.ps`

- **-gcorr filename** to specify grayscale mapping tables to halftone the grayscale and color images to bilevel for output.

When you install particular printers with InfoPrint Manager, you also install these grayscale mapping tables for each type of PostScript level 3 halftone dictionary option.

For example, on a Windows server an InfoPrint HD3-HD4, HD5-HD6, HS3, MD1-2 MS1, PD1-PD2, or PS1 4100 printer provides these:

- `/usr/lpp/psf/config/4100.ibm71lpi.tf.ap.ps` for dark halftones
- `/usr/lpp/psf/config/4100.ibm71lpi.tf.dt.ps` for midtone halftones
- `/usr/lpp/psf/config/4100.ibm71lpi.tf.lr.ps` for standard halftones
- `/usr/lpp/psf/config/4100.ibm71lpi.tf.ls.ps` for accutone halftones
- `/usr/lpp/psf/config/4100.ibm71lpi.tf.oc.ps` for dark2 halftones
- `/usr/lpp/psf/config/4100.ibm85lpi.tf.ap.ps` for dark halftones
- `/usr/lpp/psf/config/4100.ibm85lpi.tf.dt.ps` for midtone halftones
- `/usr/lpp/psf/config/4100.ibm85lpi.tf.lr.ps` for standard halftones
- `/usr/lpp/psf/config/4100.ibm85lpi.tf.ls.ps` for accutone halftones
- `/usr/lpp/psf/config/4100.ibm85lpi.tf.oc.ps` for dark2 halftones
- `/usr/lpp/psf/config/4100.ibm106lpi.tf.ap.ps` for dark halftones

- /usr/lpp/psf/config/4100.ibm106lpi.tf.dt.ps for midtone halftones
- /usr/lpp/psf/config/4100.ibm106lpi.tf.lr.ps for standard halftones
- /usr/lpp/psf/config/4100.ibm106lpi.tf.ls.ps for accutone halftones
- /usr/lpp/psf/config/4100.ibm106lpi.tf.oc.ps for dark2 halftones
- /usr/lpp/psf/config/4100.ibm141lpi.tf.ap.ps for dark halftones
- /usr/lpp/psf/config/4100.ibm141lpi.tf.dt.ps for midtone halftones
- /usr/lpp/psf/config/4100.ibm141lpi.tf.lr.ps for standard halftones
- /usr/lpp/psf/config/4100.ibm141lpi.tf.ls.ps for accutone halftones
- /usr/lpp/psf/config/4100.ibm141lpi.tf.oc.ps for dark2 halftones

and `-gcorr` and `-thresh` must be used to select an appropriate halftone.

Limitations of the `img2afp` transform

When using the `img2afp` transform, be aware of these limitations:

- Only jobs that contain either pure IOCA data or IOCA overlaid by other bilevel-compatible OCAs print correctly.
- `img2afp` does not support one bit per spot CMYK data (FS42) data conversions.

Examples

For each of these examples, the user has an AFP input file of an FS45 image that they are converting to an FS10 file for printing on a black-and-white printer. To obtain their FS45 input file, they might have used either the `tiff2afp`, `gif2afp`, `jpeg2afp`, `pdf2afp`, or `ps2afp` transform to convert an image file from one of those formats

To convert an FS45 image (`sampleFS45.afp`) to an FS10 image (`outFS10.afp`) from an InfoPrint command line for printing on an InfoPrint 21 printer, type this on the command line:

```
img2afp -a fs10 -thresh 4322.ibm106lpi.ta.ps -gcorr 4322.ibm106lpi.tf.dt.ps sampleFS45.afp \
-o outFS10.afp
```

To print the resulting FS10 image (`outFS10.afp`) on an InfoPrint 21 printer, type this on the command line:

```
pdpr -p ip21-ld outFS10.afp
```

To convert an FS45 image (`DSC011FS45.afp`) to an FS10 image (`DSC011FS10.afp`) with standard halftones from an InfoPrint command line for printing on an InfoPrint 4100–HD3/HD4 Advanced Function Printing™ System printer, type this on the command line:

```
img2afp -a fs10 -thresh 4100-HD3-HD4.ibm106lpi.ta.ps -gcorr 4100-HD3-HD4.ibm106lpi.tf.lr.ps \
DSC011FS45.afp -o DSC011FS10.afp
```

To print the resulting FS10 image (`DSC011FS10.afp`) on an InfoPrint 4100–HD3/HD4 Advanced Function Printing System printer, type this on the command line:

```
pdpr -p silver-ld DSC011FS10.afp
```

To convert an FS45 image (`DSC015FS45.afp`) to an FS10 image (`DSC011FS15.afp`) with dark halftones from an InfoPrint command line for printing on an InfoPrint 4000 Advanced Function Printing System printer, type this on the command line:

```
img2afp -a fs10 -thresh 4000.ibm106lpi.ta.ps -gcorr 4000.ibm106lpi.tf.ap.ps \
DSC015FS45.afp -o DSC011FS15.afp
```

To print the resulting FS10 image (DSC011FS15.afp) on an InfoPrint 4000 Advanced Function Printing System printer, type this on the command line:

```
pdpr -p ip40001-1d DSC015FS10.afp
```

Customizing the TIFF, JPEG, and GIF transforms

You can customize the transforms for TIFF, JPEG, and GIF data by specifying values in the transform configuration files. Table 20 shows the default configuration files that InfoPrint Manager provides. You can either modify these files or create your own.

Table 20. Default TIFF, JPEG, and GIF Transform Configuration Files

| Data Stream | Transform | Configuration Files |
|-------------|-----------|--|
| TIFF | tiff2afp | <i>install_path</i> \tiff2afp\tiff2afp.cfg <i>install_path</i> \tiff2afp\tiff2afp.3160cfg <i>install_path</i> \tiff2afp\tiff2afp.3900cfg |
| JPEG | jpeg2afp | <i>install_path</i> \jpeg2afp\jpeg2afp.cfg <i>install_path</i> \jpeg2afp\jpeg2afp.3160cfg <i>install_path</i> \jpeg2afp\jpeg2afp.3900cfg |
| GIF | gif2afp | <i>install_path</i> \gif2afp\gif2afp.cfg <i>install_path</i> \gif2afp\gif2afp.3160cfg <i>install_path</i> \gif2afp\gif2afp.3900cfg |

InfoPrint uses the .3160cfg and .3900cfg configuration files to transform documents that have been submitted to print on an InfoPrint 60 printer or InfoPrint 4000 laser printer respectively.

Sample configuration file

This is an example of a configuration file for the TIFF transform. The configuration files for the JPEG and GIF transforms are similar.

```
a=ioca10  
choice=full  
cmp=g4  
ms=5120  
msf=0.01  
nosniff=yes  
noterm=yes  
v=yes  
pagetype=page  
r=600  
x=0  
y=0
```

The configuration file uses options in the same format as the transform options that you specify on the command line, except that command line options begin with a dash (-). For the options and values that you can specify in the configuration file, see the *InfoPrint Manager: Reference*.

Hierarchy of transform options

InfoPrint Manager assigns a hierarchy to its use of options and configuration-file information when it runs the TIFF, JPEG, or GIF transform program. This lists the order in which InfoPrint uses command-line options and information specified in configuration files:

1. Any values you specify on the command line, including values in the configuration files you specify with the **-C** option.

InfoPrint Manager commands process options from left to right. If you enter the same option more than once, InfoPrint Manager uses the last occurrence of the flag to determine the value to use. For example, if you specify this command:

```
tiff2afp -Cconfig.file -r240 -r300 myfile.tif
```

the **tiff2afp** command transforms the file using 300-pel resolution. InfoPrint Manager ignores the resolution value specified in the configuration file `config.file` and the first **-r240** flag and value.

2. Values specified in the default transform command configuration file named in Table 20 on page 189.
3. Default values that are built into InfoPrint Manager. These are the same as the transform defaults.

Working with the transform for line data

InfoPrint Manager includes a line-data transform program that transforms line data into the Advanced Function Presentation (AFP) data stream. Converting the line data lets you print it on high-speed AFP printer devices.

The **line2afp** command and its keywords are a subset of the AFP Conversion and Indexing Facility (ACIF) **acif** command. When you use this transform and if errors occur, you might receive some error messages that make references to ACIF.

This section describes these:

- “What is line data?”
- “What are ANSI and machine carriage controls?” on page 191
- “What are variable-length and fixed-length files?” on page 192
- “How does the `imageout` keyword affect processing?” on page 193
- “Customizing the line data transform” on page 194

What is line data?

Line data is simply unformatted data; data with few or no embedded control characters to create font changes, page breaks, and so on. The term line data can cover a variety of data streams, such as:

- Traditional line printer format, also called *1403 format*
- Unformatted ASCII files without escape sequences
- DBCS (double-byte character set) ASCII files generated for an IBM 5577 or 5587.

Notes:

1. The **line2afp** transform does not handle DBCS ASCII files. For this type of input, use the **db2afp** transform.

2. ACIF accepts EBCDIC DBCS line data files that use SOSI (shift-out/shift-in) characters. ACIF must be coded with the **PRMODE** control statement set to SOSI1, SOSI2 or SOSI3, as documented in the *ACIF User's Guide*.

Line data is typically created by an application program. For example, an application might produce a bank statement that has line data indicating an account's daily balance.

The InfoPrint line-data transform lets you format these kinds of data with a page definition and form definition for printing on InfoPrint-managed printer devices:

- S\370 line-mode data

This type of line data was originally designed for a 1403 printer, is typically generated on a S\370 host processor, and is usually EBCDIC characters with embedded control characters (carriage control, table reference characters, and so on). This type of line data can have double-byte code points and shift in\shift out controls.

- Mixed-mode data

S\370 line-mode data embedded with certain AFP structured fields (for example, **Include Page Segment**)

- Single-byte ASCII data with no embedded control characters except for newlines.
- Single-byte ASCII data that contains ANSI carriage-control characters, table-reference characters, or both.
- Single-byte ASCII data that contains carriage returns and form feed controls, if you specify the `asciinp` or `asciinp` user-exit program.

When you transform the line-data job, you must specify a page definition and a form definition. For more information about the page definitions and form definitions available to you, see the *InfoPrint Manager: Reference*. For more information about associating page definitions and form definitions with jobs, see the online help in the InfoPrint Manager Administration GUI.

Notes:

1. You cannot use the line-data transform when printing files containing Proprinter ASCII.
2. When the **line2afp** command processes any unrecognized or unsupported keyword, **line2afp** issues a message, ignores the keyword, and continues processing any remaining keywords. The **line2afp** command then stops processing.
3. InfoPrint Manager also lets you transform and print DBCS ASCII data and DBCS EUC data without a page definition. For more information, see the **db2afp** command in the *InfoPrint Manager: Reference*.

What are ANSI and machine carriage controls?

In many environments (including IBM mainframes and most minicomputers), printable data normally contains a carriage control character. The carriage control character acts as a vertical tab command to position the paper at the start of a new page, at a specified line on the page, or to control skipping to the next line. The characters can be one of two types: ANSI carriage control or machine carriage control.

ANSI carriage control characters

The most universal carriage control is ANSI, which consists of a single character that is a prefix for the print line. The standard ANSI characters are listed in

Table 21.

Table 21. ANSI carriage controls

| ANSI | Action |
|-------|---|
| space | Single space the line and print. |
| 0 | Double space the line and print. |
| - | Triple space the line and print. |
| + | Do not space line and print. |
| 1-9 | Skip to a vertical position on the page as defined by a vertical tab record (which is either printer- or system-dependent) or by a Page Definition. |
| A,B,C | Skip to a vertical position on the page as defined by a vertical tab record (which is either printer- or system-dependent) or by a Page Definition. |

All ANSI control characters perform the required spacing before the line prints. Using **line2afp** command keywords and values, ANSI controls might be encoded in EBCDIC (**cctype=a**) or in ASCII (**cctype=z**).

Machine carriage control characters

Machine carriage controls were originally the actual hardware control commands for printers, and are often used on other systems. Machine controls are binary values, not symbols. They are not represented as characters in any encoding and, therefore, machine controls cannot be translated. Some typical machine controls are listed in Table 22.

Table 22. Machine carriage control characters

| Machine | Action |
|---------|--|
| X'09' | Print the line and single space |
| X'11' | Print the line and double space |
| X'19' | Print the line and triple space |
| X'01' | Print the line (do not space) |
| X'0B' | Space one line immediately (do not print) |
| X'89' | Print the line, then skip to channel 1 (top of form) |
| X'8B' | Skip to channel 1 immediately (do not print) |

Machine controls print before performing any required spacing. There are many more machine control commands than ANSI.

Carriage controls can be present in a file, but to use carriage controls at all, every record in the file must contain a carriage control. If the file contains carriage controls but the **line2afp** command keyword and value **cc=no** is specified, the carriage controls are treated as printing characters. If no carriage controls are specified, the file prints as though it were single spaced.

What are variable-length and fixed-length files?

The line-data transform program needs to know two things about a file to transform it:

- The length of each print record
- The kind of carriage control used

Some files contain information in each record that describes the record length; these are called variable-length files. Other files require an external definition of length; these are called fixed-length files.

MO:DCA structured fields are treated as a special case. All such structured fields are self-identifying and contain their own length. They do not need to contain a length prefix to be correctly interpreted, but are also processed correctly if the length prefix is present.

Variable-length and fixed-length files

Variable-length files might use a length prefix, which means they contain a prefix that identifies the length of the record in the file. Each record contains a field that gives the length of the record. If the record contains a length, that length must be a prefix for each record and it must be a 16-bit binary number that includes the length of the 2-byte length prefix. Use the **fileformat=record** keyword and value to identify files with length prefixes.

Variable-length files might use either a separator or a delimiter to indicate the end of a record, instead of using a length prefix. All of the bytes up to, but not including, the delimiter are considered part of the record. For compatibility with other systems, the default record separator for the **line2afp** command is X'0A'.

InfoPrint Manager reads the first six bytes and tests for all ASCII characters (code points from X'00' to X'7F') to determine if a file is encoded in ASCII or EBCDIC. If no non-ASCII characters are found, the line-data transform program assumes that the file uses the ASCII **newline** character, X'0A'. Otherwise, the transform assumes the file uses the EBCDIC **newline** character, X'25'. Because an input file can misguide the line-data transform, a set of rules has been established to determine how the transform processes the file.

| Data Type | Newline Character |
|--|-------------------------------------|
| All EBCDIC | EBCDIC X'25' |
| All EBCDIC | ASCII X'0D0A' or X'0A' ¹ |
| All ASCII | EBCDIC X'25' ¹ |
| All ASCII | ASCII X'0D0A' or X'0A' |
| <p>1: These combinations are possible only if a file contains a prefix with a string that indicates a different code set than actually exists.</p> <ul style="list-style-type: none"> • For EBCDIC data with ASCII newlines, use X'0320202020200A' as the first seven bytes of the file. • For ASCII data with EBCDIC newlines, use X'03404040404025' as the first seven bytes of the file. | |

Fixed-length files

Fixed-length files contain records that are all the same length. No other separators or prefixes or self-identifying information exists that indicates the record length. You must know the record length and use the **fileformat=record, nnn** keyword and value, where *nnn* represents the length of each record.

How does the imageout keyword affect processing?

The line-data transform converts image formats (IM1) in the input file, in overlays, and in page segments to uncompressed IOCA format, if **line2afp imageout=ioca** keyword and value is specified (the default). An uncompressed IOCA image might use a significantly higher number of bytes than an IM1 image and might take more

processing time to convert, especially for shaded or patterned areas. Although IOCA is the MO:DCA-P standard for image data, and some data stream receivers might require it, all products cannot accept IOCA data. All software products from the InfoPrint Solutions Company do, however, accept IOCA data as well as IM1 image data.

If you are using non-InfoPrint products, you might want to specify **imageout=asis**.

Customizing the line data transform

InfoPrint Manager provides several sample programming exits to assist you in customizing the line-data transform. Use of the programming exits is optional. You specify the names of the exit programs with the **inpexit**, **outexit**, and **resexit** keywords. Each of these keywords is described in the *InfoPrint Manager: Reference*.

InfoPrint Manager provides these sample exits:

install_path\exits\acif\apkinp.c
Input record exit

install_path\exits\acif\apkout.c
Output record exit

install_path\exits\acif\apkres.c
Resource exit

In addition, InfoPrint Manager provides these user input record exits to translate line-data data streams:

install_path\exits\acif\apka2e.c
Converts the ASCII stream data into the EBCDIC² stream data.

install_path\exits\acif\asciinp.c
Converts unformatted ASCII data that contains carriage returns and form feeds into a record format that contains ANSI carriage control characters. This exit encodes the ANSI carriage control character in byte 0 of every record.

install_path\exits\acif\asciinpe.c
Converts unformatted ASCII data into a record format as does *asciinp.c*, and then converts the ASCII stream data into EBCDIC² stream data.

install_path\exits\acif\dbblank
Processes EBCDIC double-byte line data downloaded from the z/OS spool by adding an extra blank to the end of the input record if:

1. The last byte in the record is a blank (x'40' in EBCIDIC).
2. The second to the last byte is **not** a blank.
3. The input record is line data; that is, it is not a structured field.

This exit also updates the record length by 1 if the blank is added. The exit has no way of determining if the data is DBCS or not, so this will happen to every input record that ends in a single blank. The exit assumes that the input data is EBCIDIC, and that the output data is also EBCIDIC. In other words, the exit does **not** do any code page translation, but it simply adds an extra blank if needed.

Notes:

2. The default conversion is from code page 850 to code page 037. You can override the defaults with the **inpccsid** and **outccsid** parameters.

1. This exit is only intended to be used if the spool file consists of double-byte or mixed single- or double-byte data that has blank truncation. Adding a blank to other types of data files could cause formatting errors, depending on how the page definition is coded.
2. This exit only checks for a **single** trailing blank, so if a different number of odd blanks is present in the data, it is up to the user to make sure the data is formatted with the correct font.

The C language header file for all line-data transform exit programs is provided in the *install_path\exits\acif\apkexits.h* directory, and the build rules for the line-data transform user exits reside in *install_path\exits\acif\exit_program*.

The source code for the sample exits is provided in *install_path\exits\acif*. You can modify these source files or create your own. You must have the Microsoft Visual Studio 2005, installed on your InfoPrint Windows server to compile and build user-exit programs. Be sure to apply the latest service available. Sample project files for Microsoft Visual for each exit program are also installed in the same directory.

For more information about compiling user exit programs, see “Configuring transforms” on page 211.

Working with the transform for double byte text streams

InfoPrint Manager includes the **db2afp** transform, a program that transforms both double-byte character set (DBCS) ASCII and Extended UNIX Code (EUC) files into the Advanced Function Presentation (AFP) data stream.

This section describes:

- “What are DBCS ASCII and EUC?”
- “What font resources are needed to print DBCS ASCII and EUC?” on page 196
- “Determining what code page your print jobs use and setting the correct environment variable” on page 196

What are DBCS ASCII and EUC?

In ideographic languages like Japanese, Chinese, and Korean, there are thousands of characters. All of these characters cannot be represented with a single byte of information because a single byte only accommodates 256 characters. Therefore, at least one more byte of information is required.

In DBCS ASCII files, each ideographic character is exactly two bytes. In EUC files, each ideographic character can be two, three, or four bytes, depending on the EUC implementation and language. Single-byte ASCII characters can be mixed in with DBCS and EUC characters.

InfoPrint Manager for Windows supports printing DBCS ASCII files in the Japanese and Traditional Chinese languages, which can contain formatting controls for the IBM 5577 or 5587 printers. InfoPrint Manager for Windows also supports printing EUC files in the Japanese, Traditional Chinese, and Korean languages, but you must submit those jobs from a UNIX or AIX workstation. EUC files cannot contain any formatting control characters.

What font resources are needed to print DBCS ASCII and EUC?

You can use the **db2afp** command to transform DBCS ASCII and EUC files that use these code pages:

- 932 (Japanese PC)
- 950 (Traditional Chinese PC)
- 33722 or eucJP (Japanese EUC)
- 964 or eucTW (Traditional Chinese EUC)
- 970 or eucKR (Traditional Korean EUC)

Note: Code page 938 (Traditional Chinese PC) is not supported on Windows 2000. If your files use code page 938, you cannot use InfoPrint Manager for Windows on a Windows 2000 operating system to print them.

Your InfoPrint Manager server must be able to access the appropriate DBCS fonts when you print the transformed files. DBCS fonts are available for the MVS, VM, Windows 2000, and AIX operating systems as separately orderable licensed programs. To make the fonts available on your InfoPrint Windows 2000 system, you must make sure that you have installed the fonts on your system and then make the double-byte fonts known to InfoPrint Manager for Windows.

For more information about setting up font resources to print DBCS fonts, see “Fonts for printing DBCS ASCII and EUC” on page 234.

Determining what code page your print jobs use and setting the correct environment variable

Before you transform a print job, you need to determine what code page it uses, then set the PSFDBLANG environment variable to that code page. If the job was created on an AIX or a Windows workstation, you can determine the code page that the job uses by finding out what code page is active on that system. On the system that the job was created on, open a **Command Prompt** window and type:

```
chcp
```

then press **Enter**. The system responds with

```
Active code page: xxx
```

where *xxx* represents a three- to five-digit number. Use this number to set the PSFDBLANG environment variable with these steps.

1. On your InfoPrint Manager server system, click the Windows **Start** button and select **Settings ->Control Panel**.

Note: If you have more than one InfoPrint Manager server system, you need to set this environment variable on all of the servers that contain actual destinations that will use the **db2afp** transform.

2. In the Control Panel window, double-click **System**.
3. In the **System Properties** dialog, click **Environment**.
4. In the **Variable** field, type PSFDBLANG.
5. In Table 23 on page 197, locate the **Code Page Value** that you got from your system above.

Table 23. Code pages and their associated PSFDBLANG values

| Code Page Value | PSFDBLANG Value | Language |
|-----------------|-----------------|-------------------------|
| 932 | J | Japanese PC |
| 950 | T | Traditional Chinese PC |
| 33722 or eucJP | JE | Japanese EUC |
| 964 or eucTW | CE | Traditional Chinese EUC |
| 970 or eucKR | KE | Traditional Korean EUC |

6. Find the **PSFDBLANG Value** that corresponds to that code page and type it in the **Value** field of the **System Properties** dialog.

Note: The PSFDBLANG Value is case-sensitive. Be sure to type it in all caps.

7. Click **OK**.

The **db2afp** command assumes that all jobs use this code page as long as you do not specify either the **-i** flag or the **-e** flag when running the command from a **Command Prompt** window.

Working with the InfoPrint PPML transform program

InfoPrint Manager for Windows Version 2.2 provides a transform program to convert Personalized Print Markup Language (PPML) data streams into the Advanced Function Presentation (AFP) format. PPML is an emerging XML-based print data stream that is divided into subsets. InfoPrint Manager for Windows supports the Graphic Arts Conformance Subset for processing objects in the data stream that can consist of PostScript, PDF, TIFF, and JPEG objects. Sample files that demonstrate the power of this transform are provided in the default directory of *install_path*\ppml2afp with the names **samplePS.ppml**, **samplePDF.ppml**, **sampleJPEG.ppml**, and **sampleTIFF.ppml**.

Users can submit PPML jobs to InfoPrint through these methods:

- Hot folder interfaces from PC or Macintosh systems.
- Use of the **pdpr** command from the Windows command line.

For more information about how to submit PPML jobs to InfoPrint Manager, see *InfoPrint Manager: Reference*.

When a PPML print job is submitted to print on a PSF physical printer, InfoPrint automatically invokes the transform. You can also run the transforms from the command line without printing the generated output. You might find this useful if you intend to print the job later. Jobs print more quickly if they have already been transformed.

The PPML transform has options that you can use to specify processing information. For a list of the options or options and values for each transform, refer to the *InfoPrint Manager: Reference*. Configuration files, environment variables, and user-exit programs allow you to specify processing information for InfoPrint to use when it invokes the transform automatically. You can also use configuration files and environment variables instead of typing options on the command line whenever you run a transform.

Customizing the PPML transform

You can customize the transform for PPML data by specifying values in the transform configuration files. Table 24 the default configuration files that InfoPrint provides. You can either modify these files or create your own.

Table 24. Default PPML transform configuration file

| Data Stream | Transform | Configuration File |
|-------------|-----------|------------------------------------|
| PPML | ppml2afp | install_path\ppml2afp\ppml2afp.cfg |

Sample PPML configuration file

Figure 12 shows an example of a configuration file for the PPML transform.

```
# default ppml2afp configuration file
#

# directory where PPML2AFP can create and maintain other files
ppml_work_directory = AFP_Support_Path\ppml2afp

# port number of the server running the PS2AFP transform
ps_server_port = 8251

# server name of the server running the PS2AFP transform
ps_server_name = ipm_server

# resolution of the AFP being created; only supported values are 240, 300, 480
# and 600
ppml_resolution = 600

# output type format; only supported values are FS45 (color), FS10 (monochrome)
# or I01_G4(monochrome)
ppml_outdatatype = FS45

# page height (measurement units: i (inches), c (centimeters), m (millimeters))
page_height = 11i

# page width (measurement units: i (inches), c (centimeters), m (millimeters))
page_width = 8.5i

# ignore all relative paths from the zip file and store all the resources under
# a single directory
ignore_path = true

# enable tracing
trace = off
```

Figure 12. Sample PPML configuration file

The configuration file uses keyword equivalents of the transform options. See *InfoPrint Manager: Reference* for the keywords and values that you can specify in the configuration file.

Hierarchy of PPML transform options

InfoPrint assigns a hierarchy to its use of options and configuration-file information when it runs the PPML transform program. This lists the order in which InfoPrint uses options and information specified in configuration files:

1. Any values you specify on the command line, including values in the configuration file you specify with the -C option.

InfoPrint commands process options from left to right. If you enter the same option more than once, InfoPrint uses the last occurrence of the option to determine the value to use. For example, if you specify this command:

```
ppml2afp -C config.file -r240 -r300 myfile.ps
```

The **ppml2afp** command transforms the file using 300-pel resolution. InfoPrint ignores the resolution value specified in the configuration file `config.file` and the first **-r240** option and value.

2. Values are specified in the default transform command configuration file, which is `install_path\ppml2afp\ppml2afp.cfg`. InfoPrint ignores values in the default transform command configuration file if you invoke the transform command indirectly by submitting a job to print.
3. Default values that are built into InfoPrint. These are the same as the transform defaults.

Working with the XML transforms

XML provides a standard method for the exchange and processing of data across different computing platforms. XML data is structured according to standards from the World Wide Web Consortium (W3C). Specifically designed for Web applications, XML differs from HTML in that, while HTML contains information about how data is formatted for presentation on Web pages, XML contains data with no presentation information. A W3C standard stylesheet language, called Extensible Stylesheet Language (XSL), uses formatting objects to describe how XML data is presented. XML data containing XSL formatting objects is called XSL-FO. XSL-FO describes document presentation details, such as pagination, layout, and styling information.

Using the XML transforms with InfoPrint Manager

XML has become the key standard in the deployment of new technologies for Web services, data interchange, messaging, and application integration. Support for XML is found in several InfoPrint products, including XML Extender and Print Services Facility (PSF) for z/OS.

The XML transforms are the preferred method for printing highly-dynamic XML data on AFP printers because the transforms can efficiently process data that changes from job to job. The XML transforms are also an efficient, cost-effective alternative to paper-based communication because it can transform XML data to PDF documents for electronic delivery to customers.

Other benefits of using **xml2afp** and **xml2pdf** to transform XML data to AFP or PDF include:

- You can use your existing AFP output system to print or view your XML data without worrying about compatibility issues.
- The XML transforms provide you with significant formatting flexibility for your XML documents.
- Print delivery is guaranteed when you transform your XML data to AFP and then print to an AFP printer.
- Once XML data is transformed, you can use different tools to:
 - Print to an AFP printer or transform AFP data to PostScript (PS) or printer control language (PCL) for printing on a PS or PCL printer.
 - Send PDF data to an electronic destination.
 - View or archive AFP or PDF data.

The XML transforms let you take advantage of XML for data interchange and content management while using AFP's print and presentation technology and

PDF's electronic document exchange. Figure 13 shows what you can do with XML data when you use the XML transforms.

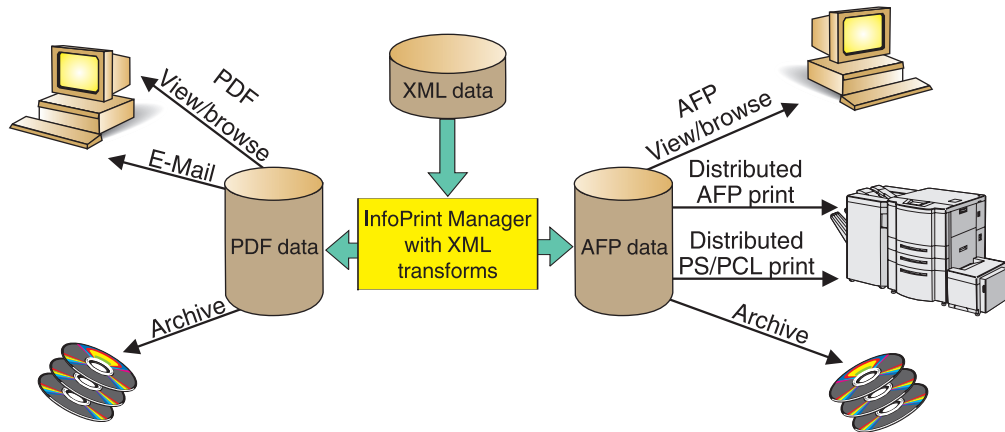


Figure 13. Scenarios for using XML data that has been transformed to AFP or PDF

The InfoPrint products you can use with the AFP or PDF output include:

AFP view/browse

AFP Viewer plug-in or Content Manager OnDemand

PDF view/browse

Content Manager OnDemand

Distributed AFP print

InfoPrint Manager and PSF for z/OS

Distributed PS/PCL print

InfoPrint Manager, Infoprint Server, and Infoprint Server Transforms

E-mail IP PrintWay™ component of Infoprint Server

Archive

Content Manager OnDemand

How do the XML transforms work?

You use the `xml2afp` and `xml2pdf` to transform XML data to an AFP or a PDF data stream. To do this, you must supply one of these to the XML transforms::

- XML files (or data sets), which do not contain data placement and presentation information, and an accompanying XSL style sheet
- XSL-FO files (or data sets), which contain XML data with XSL formatting objects

To transform XML data to AFP or PDF, the XML transforms use the data you supply and do one of these:

- Uses the XSL style sheet to transform the XML files into XSL-FO and then completes the transformation to AFP or PDF
- Directly transforms your supplied XSL-FO files to AFP or PDF

Figure 14 on page 201 shows how the XML transforms process data from XML to AFP or PDF data.

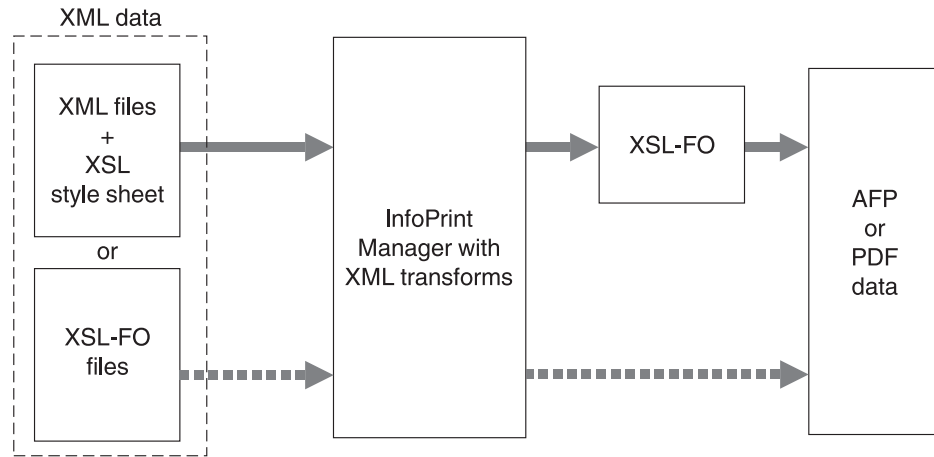


Figure 14. Process for transforming XML data to AFP or PDF

Running the XML transforms

You can run the XML transforms as:

- A standalone transform
- A transform managed by InfoPrint Manager

Capabilities and limitations

The XML transforms have these capabilities and limitations, depending on how data is being transformed:

- Capabilities and limitations for transforming all data
- Capabilities and limitations for transforming data to AFP
- Capabilities for transforming data to PDF

General capabilities and limitations for transforming all data

Output document size

Output document size is dependent on the amount of memory available; however, no checking is done between document size and available memory. If the output document is too big for the available memory, you receive an out of memory error and the transform stops processing.

XSL support

The transforms support most, but not all, formatting objects, properties, and features of the XSL Version 1.0 standards as documented by the W3C (<http://www.w3.org/TR/xsl/>). See Appendix C, “Supported formatting objects,” on page 335 for the formatting objects that the supports.

Style sheets embedded and referenced in XML files are not supported.

Capabilities and limitations for transforming data to AFP

Bar code support

The transform does not support bar codes.

Font support

The first font in the font index with properties that most closely match the desired characteristics is used. Condensed and expanded fonts are usually

only used when the font-stretch property is selected. Italic and oblique fonts are considered the same and are used interchangeably.

The XML transforms support converting double-byte character set (DBCS) fonts from one code page to another.

The XML transforms work with the OpenType fonts from the command line. For more information about OpenType Fonts, see *Using OpenType Fonts in an AFP System*.

To use the **xml2afp** transform, you must install the appropriate font features for either Infoprint Fonts, Version 1.1.0, or AFP Font Collection, Version 2.1.0.

Graphic support

You can specify graphic data in one of these AFP resources:

Overlay

An overlay contains a collection of constant image data (such as lines, shading, boxes, or logos) that can be merged with variable data during printing. The AFP output file references the name of an overlay, which is located in a resource directory. Because the overlay is not included but is only referenced in the output file, you must specify the image size in the XSL external-graphic formatting object. For example:

```
<fo:external-graphic src="overlay:corplogo" content-height="4in" content-width="2in"/>
```

Page segment

A page segment contains image data (such as bar codes, signatures, logos, or graphics in image format) that can be merged with variable data during printing. The AFP output file references the name of a page segment, which is located in a resource directory. Because the page segment is not included but is only referenced in the output file, you must specify the image size in the XSL external-graphic formatting object. For example:

```
<fo:external-graphic src="pageseg:corpsign" content-height="4in" content-width="2in"/>
```

IOCA object

An Image Object Content Architecture (IOCA) object contains a series of picture elements (pels) arranged in rows and columns, and specifies where the image is placed on a page. The XML transforms access the first IOCA object in a specified MO:DCA-P file and place it inline in the AFP output file (only MO:DCA-P image data is supported). The transforms obtain the actual size from the image; therefore, you do not need to specify the size in the XSL external-graphic formatting object. If you do specify the size with the external-graphic formatting object, the transforms crop the image to make it the specified size or add whitespace to the bottom-right corner, so the image appears in the upper-left portion of the allotted space. Here is an example of the formatting object you specify for an IOCA object:

```
<fo:external-graphic src="myfile/image.afp"/>
```

MO:DCA-P output

Output from the transform conforms to the MO:DCA Interchange Set 1 (IS/1) architecture (refer to *Mixed Object Document Content Architecture Reference*, SC31-6802).

Capabilities for transforming data to PDF

PDF output

The transform converts XML data to PDF 1.1 data streams.

Customizing the XML transforms

The system administrator can customize the XML transforms as standalone transforms or as transforms managed by InfoPrint Manager. If you have InfoPrint Manager installed, we recommend you to use it to manage the XML transforms.

This section details the common, standalone, and InfoPrint Manager customization tasks the administrator must perform before the job submitter can run the XML transforms. The administrator performs the common customization tasks and either the standalone or InfoPrint Manager customization tasks, depending on whether the XML transforms are run as a standalone transform or managed by InfoPrint Manager.

Common customization tasks

The common customization tasks you perform depend on whether you are using the XML to AFP transform or the XML to PDF transform.

Tasks for using the XML to AFP transform:

The sample **xml2afp** configuration file is provided in `/usr/lpp/psf/xmltransform/xml2afp.cfg` on AIX and `install_path\xmltransform\xml2afp.cfg` on Windows. These items are set in the file and can be modified:

1. The default location of the AFP fonts.
2. The default paper size.

Additionally, defaults for all the **xml2afp** options can be set in the configuration file.

The syntax of the configuration file is exactly the same as the command line syntax with these additional rules:

1. Blank lines are ignored.
2. All data on a line after a pound sign is ignored. The pound sign might occur anywhere on a line.
3. To include a pound sign in parameter data, it must be escaped; that is, it must be preceded by a backwards slash.
4. White space before and after parameter data is removed.
5. Parameter data on successive lines is concatenated with a single space between them.
6. Parameters might span lines as long as they follow rules 1 through 5.

Customizing the xml2afp.cfg file: You can either create a new configuration file or modify the sample that is provided:

1. Create a new **xml2afp** configuration file, **xml2afp.cfg**, which lets you configure the **xmp2afp** transform.

To create the file on Windows, copy the sample configuration file, **install_path\xmltransform\xml2afp.cfg**, to a temporary location.

Note: To modify the sample configuration file, you still need to copy it.

2. Edit the file using your preferred editor, such as **vi** or **notepad**.

3. Add `-C xml2afp.cfg` to **other-transform-options** for your XML transform. You can also add `-C xml2afp.cfg` to the IVD to apply the **xml2afp** transform to all the jobs on the associated logical destination.

Customizing the font index file for xml2afp: The sample font index file for **xml2afp** is provided in `/usr/lpp/psf/xmltransform` on AIX and `install_path\xmltransform` on Windows. The samples include a `outline_font_index` and a `raster_font_index` that you use to map XML font names to both outline FOCA fonts and raster fonts in the font path.

Note: If you are using OpenType fonts, the font index files are not necessary.

A font is referenced in XSL-FLO using these attributes:

family
size
style
weight

Font index files describe AFP fonts using these attributes. In addition, a map is defined that maps unicode code points to AFP code points.

The font index file consists of a sequence of key and value pairs, separated by whitespace (such as a space, tab, or a newline). Comments can be inserted anywhere between the delimiters `/*` and `*/`. You can also use `//` to indicate that the remainder of the current line is a comment.

The keys and their meanings are:

Key **Meaning**

map Select the named character map, creating it if it does not exist. A character map is used to map unicode code points to AFP code page names and code points. The default is **default**.

codepage

Set the code page to use for subsequent character mappings.

to End a range of mapped unicode code points. The value must be an integer representing a valid unicode code point, and it must be greater than the beginning value of the range given by the closest preceding value for the **char** keyword. The value must be a valid unicode code point.

at Creates a mapping using the closed range given by a preceding **char** value and an optional **to** value. The unicode characters from begin to end are mapped to the AFP code point range from the **at** value to the **at** value + end - begin, inclusive, using the closest preceding **codepage** value. This value must be an integer from 0 to 65535.

family Establish the current font family name. The value must be a string containing no whitespace characters.

size A font size, expressed as a floating point value giving the vertical size of the font, in points (1/72nds inches). Size must be omitted when defining outline technology fonts, since they can take any size.

style A font style. The value must be one of these keywords:

normal
italic
oblique
backslant

The default is **normal**.

weight

A font weight. The value can be one of these keywords:

normal
bold

The value might also be one of the values between 100 and 900 inclusive, in increments of 100. The keyword **normal** is equivalent to 400, and the keyword **bold** is equivalent to 700. The default value is **normal** (400).

charset

Define a font with the preceding values given for the font properties (family, size, style, and weight), or default values if no preceding property values have been established. The currently selected character map is associated with the font, and it is used for mapping unicode code points when the font is selected. If modifications are made to the map later in the file, those changes do not affect the defined font.

alias Establish a font family alias for the current family.

Of the keywords listed, only two are active: **at** and **charset**. The other keywords collect values used when an active keyword is found. This allows for a variety of possible arrangements for a font index. For example:

```
family courier
alias monospace
size 7
  weight normal
  style normal
  charset C0420070
  style italic
  charset C0430070
weight bold
  style normal
  charset C0440070
  style italic
  charset C0450070
```

Defines the same set of fonts as:

```
family courier size 7 weight normal style normal charset C0420070
family courier size 7 weight normal style italic charset C0430070
family courier size 7 weight bold style normal charset C0440070
family courier size 7 weight bold style italic charset C0450070
alias monospace
```

But can be considered more difficult to read.

Tasks for using the XML to PDF transform: The sample **xml2pdf** configuration file is provided in `/usr/lpp/psf/xmltransform/xml2pdf.cfg` on AIX and `install_path\xmltransform\xml2pdf.cfg` on Windows. The default paper size can be modified. Additionally, defaults for all the **xml2pdf** options can be set in the configuration file.

The syntax of the configuration file is exactly the same as the command line syntax with these additional rules:

1. Blank lines are ignored.
2. All data on a line after a pound sign is ignored. The pound sign can occur anywhere on a line.
3. To include a pound sign in parameter data, it must be escaped; that is, it must be preceded by a backwards slash.

4. White space before and after parameter data is removed.
5. Parameter data on successive lines is concatenated with a single space between them.
6. Parameters can span lines as long as they follow rules 1 through 5.

These are the common tasks you must do when using the XML to PDF transform:

1. Create the XML Extender configuration file, **xml2pdf.cfg**, which lets you configure XML Extender. To create the file:
 - Use Windows commands to copy the sample configuration file, *install_path\xmltransform\samples\xml2pdf.cfg*, to *install_path\xmltransform\xml2pdf.cfg*:

```
copy install_path\xml2afp\samples\xml2pdf.cfg install_path\xml2afp\xml2pdf.cfg
```
2. Edit the file using your preferred editor.

Color management resource transform support

InfoPrint Manager enables these transforms to do color management:

- ps2afp
- jpeg2afp
- tiff2afp
- gif2afp

Note: The PCL and SAP transform do not support color management.

Transforms capable of color management allows the specification of color resource information at job submission time and the implementation of color management at the transform level within InfoPrint Manager. This support will provide color fidelity with better printer performance.

Submitting job using transforms for color management

Before you use transforms to do color management, make sure that you have installed the ICC Profiles using the Resource Installer into the Resource library as Color Management Resources (CMRs). For more information, see *cac_CMRs.dita* and *cac_ResInst.dita*.

Notes:

- You can specify the ICC Profile directly in a pure PS/PDF transform.
- Only audit color conversion, instruction color conversion, and link color conversion CMRs are supported.

To submit a job:

1. Select your destination printer.
2. Right-click and select **Job and Document Defaults**.
3. Click **Modify**.
4. Click **Document AFP Color**. If this tab is not visible, click **Show more** and then select **Document AFP Color**.
5. Enter one or more input color management resources in **Input color management resources**.

6. Next, enter an output color management resource in **Output color management resource**.
7. From **Color rendering indent**, select one option.
8. Then, select the output color resource tagging from **Tag output CMR**.
9. In the **Place CMR inline** option, click **Yes** to inline the color resource information in the FS45. Default is **No**.
10. Click **Submit**.

For more information about the values that you can specify, see *InfoPrint Manager: Reference*.

Chapter 25. Understanding transforms and the configurable transform subsystem

Transforms are InfoPrint objects (like queues and destinations) that you create and configure in InfoPrint Manager. Transforms receive data in a particular format or formats, process the data in some way, and output the changed data. When you create a transform, you have complete control over what data format or formats it operates on and what type of processing it does. The processing that the transform performs can be anything from simply copying the data to a different place on disk, to filtering the data stream that the transform receives (for example, to remove a particular PostScript order), to transforming the data to a completely different format (for example, converting PCL to AFP).

When you create a transform, you specify several things, including:

- **Input data format**

The data stream that is sent to the transform. The input data format is what the transform uses to determine whether it has any work to do. If you send a PostScript job through a transform that has its input data stream set only to **PCL**, the job will bypass the transform without being changed at all. You can set the transform to accept multiple input data formats.

- **Transform options**

The program or command that actually does the work of the transform; what happens during the *processing* stage. The transform options can be system commands (such as **copy**), programs provided with InfoPrint Manager (such as **ps2afp**), or your own custom transform programs (for example, **mypclfixup**).

When you create a transform, you specify the complete command line needed to invoke this program or command. In this command line, you can also specify various *substitution variables*, place holders which InfoPrint Manager replaces with a value when InfoPrint Manager runs the transform. For example, if you include `%i` in the line, InfoPrint Manager will replace it with the name of the file that the transform receives; if you include `%o`, it will be replaced with the name of the file that the transform needs to put the changed data into.

- **Output data format**

The data stream that results from the transform. You can only specify one output data format.

In addition, you can specify whether you want the file that the transform produces to be printed. If the transform doesn't return the file to be printed (for example, if the transform completes its processing and saves the file to a different location), it is called a *terminating transform*. In addition to the *terminating transform*, you can also create a *conditionally-terminating transform*. To create this, define a unique return code to indicate the transform was successful but does not return data to print.

Transforms do not do anything by themselves. They remain inactive until you associate them with an actual destination as a transform sequence. A *transform sequence* is an attribute of an actual destination that contains an ordered list of transforms. Every job that is submitted to that actual destination is sent through that list of transforms in the order specified before it is printed.

InfoPrint Manager lets you create a sequence for transforming print data before the system sends it to a printer. This provides users with a feature similar to the configurable transform sequences that you could create in PSF/2 using the **XFMFLTR** utility. For more information about creating transform sequences, see “Defining a transform sequence.”

Notes:

1. If you include a terminating transform in a transform sequence, it must be the last transform in the sequence.
2. If you invoke a terminating transform for a document in a job, the entire job ends after all the documents in that job finish processing. It does not matter whether any other documents in the job use the terminating transform.

Defining a transform sequence

A transform sequence lets you string together a series of transform objects to perform a series of tasks. This section provides an example of a transform sequence, followed by the specific procedure you can use to create a sequence of transform objects.

You want to define an actual destination that will copy AFP versions of all print jobs sent to it into a directory on your InfoPrint Manager server system. This directory is used as an archive of AFP versions of print jobs that might need to be viewed later.

To accomplish this, you use the InfoPrint Manager Administration GUI to create these three transforms:

1. **transps**

You set the input data format to PostScript, the Transform options to use **ps2afp**, and the output data format to MODCA-P (Mixed Object Document Content Architecture™).

2. **transpcl**

You set the input data format to PCL, the Transform options to use **pcl2afp**, and the output data format to MODCA-P.

3. **saveafp**

You set the input data format to AFP, the Transform options to issue a **copy** command, and the output data format to MODCA-P. In addition, you make this a terminating transform by selecting **Transform only** in the **Create Transform** dialog.

Then, create an actual destination that you want to perform the transform sequence. When the Printer Creation wizard asks to change the configuration for the printer, select yes, then click **Configuration** to define the transform sequence as follows:

1. **transps**
2. **transpcl**
3. **saveafp**

Note: If you already have the destination created, open the properties notebook for that actual destination and click **Configuration** to define the transform sequence.

Now, when you send a job to this actual destination, this sequence of actions occurs:

1. **transps** checks to see if the incoming data is PostScript. If it is PostScript, **transps** transforms the data to AFP using `ps2afp`. If it is not PostScript, **transps** does nothing.
2. **transpcl** checks to see if the incoming data is PCL. If it is PCL, **transpcl** transforms it to AFP using `pcl2afp`. If it is not PCL, **transpcl** does nothing.
3. **saveafp** copies the AFP file produced by either of the above steps into a specific directory.
4. Since **saveafp** is a terminating transform, the job is not printed but is marked complete at this point.

To create a transform sequence, use this procedure from the **InfoPrint Manager Administration** GUI:

1. Select the printer that you want to send the job to.
2. Click **Printer** → **Properties** to open the **Printer Properties** notebook for the selected printer.
3. In the **Printer Properties** notebook, click **Configuration**. The data stream transforms that this printer can use are listed in the **Transforms to use** field.

Note: If you can't see the **Transforms to use** field, click **Show more**.

4. Use the **Add** and **Remove** buttons to specify the transforms in the sequence that they should be run in the **Values** field.

For example, you might want to create the three-step transform sequence that runs the **transps**, **transppcl**, and **saveafp** transforms in sequence as described above. To accomplish this task, the **Values** field would contain these:

5. When you have entered the transforms in the correct sequence, click **Apply** to associate this transform sequence with the selected printer.

Configuring transforms

To configure a transform, you must do these tasks:

1. "Creating transforms."
2. "Associating a transform with an actual destination" on page 215.

Creating transforms

You can create a transform sequence through the **InfoPrint Manager Administration** GUI (for more specific information, see the online help topic in this GUI entitled "Server transform tasks").

To create a transform using the **InfoPrint Manager Administration** GUI, an InfoPrint Manager system administrator must set these values on the **Create Transform** window. You can access this window by clicking **Server**, and select **Transform** → **Create**.

1. Start the **InfoPrint Manager Administration** GUI.
2. Click **Server** → **Transform** → **Create**.
3. Fill in these values:

Name Type a meaningful name for the transform.

InfoPrint Manager references the transform name in transform sequences that are associated with actual destinations.

Server If not filled in, either type or select the InfoPrint Manager server in which you want to create the transform.

Transforms can only be associated with actual destinations in the same server. If the InfoPrint Manager Administration GUI is only monitoring one server, this field contains that server name.

Format of output file

Select a format for the output file produced from this transform.

Description

Type a description of this transform that will appear whenever you show this transform through the **InfoPrint Manager Administration GUI**.

Transform options

Type the command-line transform and its options, including any InfoPrint Manager substitution variables.

How to process jobs

Select how to process jobs. The options are:

- a. A transform that returns the transformed data to InfoPrint Manager for printing (**Transform and print** radio button with the **Conditional terminating return code** field left blank).
- b. A terminating transform that completes without returning data to InfoPrint Manager to print (**Transform only** radio button).
- c. A conditionally terminating transform that might or might not print the data after it has been transformed (**Transform and print** radio button with the **Conditional terminating return code** field set to a value that tells InfoPrint Manager not to print the data if the transform returns that return code value).

Document formats allowed

Add a format for the input file or file(s) that are being transformed as **Values** in the **Document formats allowed** field.

Note: You can specify either one or multiple document formats as **Values**. The format of the input file determines whether this transform is called for a job sent to this actual destination.

Use server locale

Decide whether InfoPrint Manager should pass the values of attributes specified in the %% substitution variables in the **Transform options** field in the language of the InfoPrint Manager server or in English, by using the **Use server locale** radio button. By default, this radio button passes information in the language of the server (**Yes**).

The transform examples that follow demonstrate common uses of transform objects, using the substitution values shown in Table 25 on page 213. Some of these examples presume that an application programmer has created a program with the name specified at the start of the **Transform options** field.

Notes:

1. If you are specifying any substitutions for which the passed values might contain a blank space, such as job name, be sure to put quotes around the substitution so it is passed correctly. Note that this only applies to single % substitution variables. Do not put quotes around any %% substitution variables.

2. The examples that follow presume that the **PATH** environment variable has been set to the appropriate path so you do not have to specify the fully qualified path name in the **Transform options** field.

Table 25. Transform substitution variables

| Transform options substitution variables | Meaning |
|--|---|
| %i | The name of the input file to transform. |
| %o | The name of the file in which to store the output of the transform. Note: If this is a non-terminating transform, data must be stored in the file named by %o . |
| %e | The name of the file in which to store any transform information or error messages. If anything is written to this file, it is logged in the InfoPrint Manager server log. Note: <ol style="list-style-type: none"> 1. If the transform exits with an exit code of 0 or the value set in the Conditional terminating return code field, the error messages from the transform are logged as debug severity. 2. If the transform exits with a non-zero return code, but not with the value set in the Conditional terminating return code field transform attribute, the error messages from the transform are logged as error severity. 3. InfoPrint Manager writes transform error messages to either the file specified through this substitution variable, or to standard error (stderr). You should not mix output to %e and stderr in a single run of the exit program. You should use either one or the other in any given run. |
| %u | The name of the file for updating the pages-completed and job-page-count job attributes. Note: This file should only be accessed through the transform_update utility. |
| %j | The name of the original print file, minus the path (from the document-file-name attribute). Note: This should only be used to construct another name, such as a temporary file. |
| %n | The name of the original print file, minus the path and minus the extension (from the document-file-name attribute). Note: This should only be used to construct another name, such as a temporary file. |

Table 25. Transform substitution variables (continued)

| Transform options substitution variables | Meaning |
|--|---|
| %d | <p>A text string that represents the document format of the input file. This value might be:</p> <ul style="list-style-type: none"> • ASCII for ASCII line data. • AFPDS for Advanced Function Presentation data • PCL for Printer Control Language data • PS for PostScript data <p>Note: You can also acquire document format through the %%Ddocument-format substitution value.</p> |
| %p | <p>The value of the document's destination-pass-through attribute.</p> <p>Note: This value is passed to all subsequent transforms and the actual destination.</p> |
| %q | <p>The actual destination that is processing the job.</p> |
| %s | <p>The document-sequence-number for the document.</p> |
| %t | <p>The value of the document's other-transform-options attribute.</p> <p>Note: To write one transform, but use it differently for different actual destinations or jobs, you can pass values into the transform with this parameter.</p> |
| %g | <p>The global job identifier for the job.</p> |
| %# | <p>The job-identifier (10 digits maximum).</p> |
| %%Aad_attribute%% | <p>The value of the InfoPrint Manager actual destination attribute specified. For example, if %%Aresource-context%%, InfoPrint Manager passes the actual destination's resource-context attribute value.</p> <p>Note: See the "Considerations when using the %%Nattributename substitution control sequences" topic under the "Usage guidelines" for the other-transform-options attribute in the <i>InfoPrint Manager: Reference</i> before using this substitution variable.</p> |
| %%Ddoc_attribute%% | <p>The value of the InfoPrint Manager document attribute specified. For example, if you use %%Ddepartment-text%%, InfoPrint Manager passes the document's department-text attribute value.</p> <p>Note: See the "Considerations when using the %%Nattributename substitution control sequences" topic under the "Usage guidelines" for the other-transform-options attribute in the <i>InfoPrint Manager: Reference</i> before using this substitution variable.</p> |

Table 25. Transform substitution variables (continued)

| Transform options substitution variables | Meaning |
|--|--|
| %%Jjob_attribute%% | The value of the InfoPrint Manager job attribute specified. For example, if you use %%Jjob-owner%%, InfoPrint Manager passes the job-owner attribute value of the job that owns the document being transformed. Note: See the "Considerations when using the %%Nattributename substitution control sequences" topic under the "Usage guidelines" for the other-transform-options attribute in the <i>InfoPrint Manager: Reference</i> before using this substitution variable. |

Associating a transform with an actual destination

Now that you have created a transform object, you must associate it with an actual destination before you can use it.

To associate a data stream transform with an actual destination from the **InfoPrint Manager Administration GUI**, use this procedure:

1. Select the printer that you want to send the job to.
2. Click **Printer** → **Properties** to open the **Printer Properties** notebook for the selected printer.
3. In the **Printer Properties** notebook, click **Configuration**.

The data stream transforms that this printer can use are listed in the **Transforms to use** field.

Note: If you can't see the **Transforms to use** field, click **Show more**.

4. Use the **Add** and **Remove** buttons to specify the transform in the **Values** field (the equivalent of setting the **transforms-sequence** actual destination attribute from the command line).

Note: You can string multiple transforms together to do a sequence of tasks. For more information about this feature, see "Defining a transform sequence" on page 210.

5. When you have entered the transforms in the correct sequence, click **Apply** to associate this transform sequence with the selected printer.

If you prefer to use the command line, you can use these InfoPrint commands from either an AIX command line or an MS/DOS window with **transform** objects:

- **pdcreate**
- **pddelete**
- **pdset**
- **pdl**s

For more information about the attributes in creating transform sequences, see the **Attributes for Transforms** topic in the "InfoPrint Object Attributes" chapter of the *InfoPrint Manager: Reference*.

Examples of creating transform objects

These show three specific examples (from simple to more advanced) for creating transform objects. The second and third examples require additional programming to create the programs that are called from the **Transform options** field. This section should suggest how you can use transform objects to customize your InfoPrint Manager installation.

Creating a transform object to copy to a file without printing

To define a data stream transform object from the InfoPrint Manager Administration GUI that takes an AFP input file and copies it to a file location on the hard drive without printing the output, use this procedure:

1. Start the **InfoPrint Manager Administration GUI**.
2. Click **Server**, and select **Transform** → **Create**.
3. In the **Create Transform** dialog, fill in the fields as shown in either Figure 15 on page 217 or Figure 16 on page 218, depending upon your operating system. These values create a transform that copies AFP input data to an **\afp** folder on a specific drive on Windows or a **/usr/samp** file system on AIX. Also, it names the transformed file with the name of the original file name because of the **%n** substitution variable.
4. Since you do not want the job to be printed, click **Transform only** to indicate that this transform is a terminating transform.

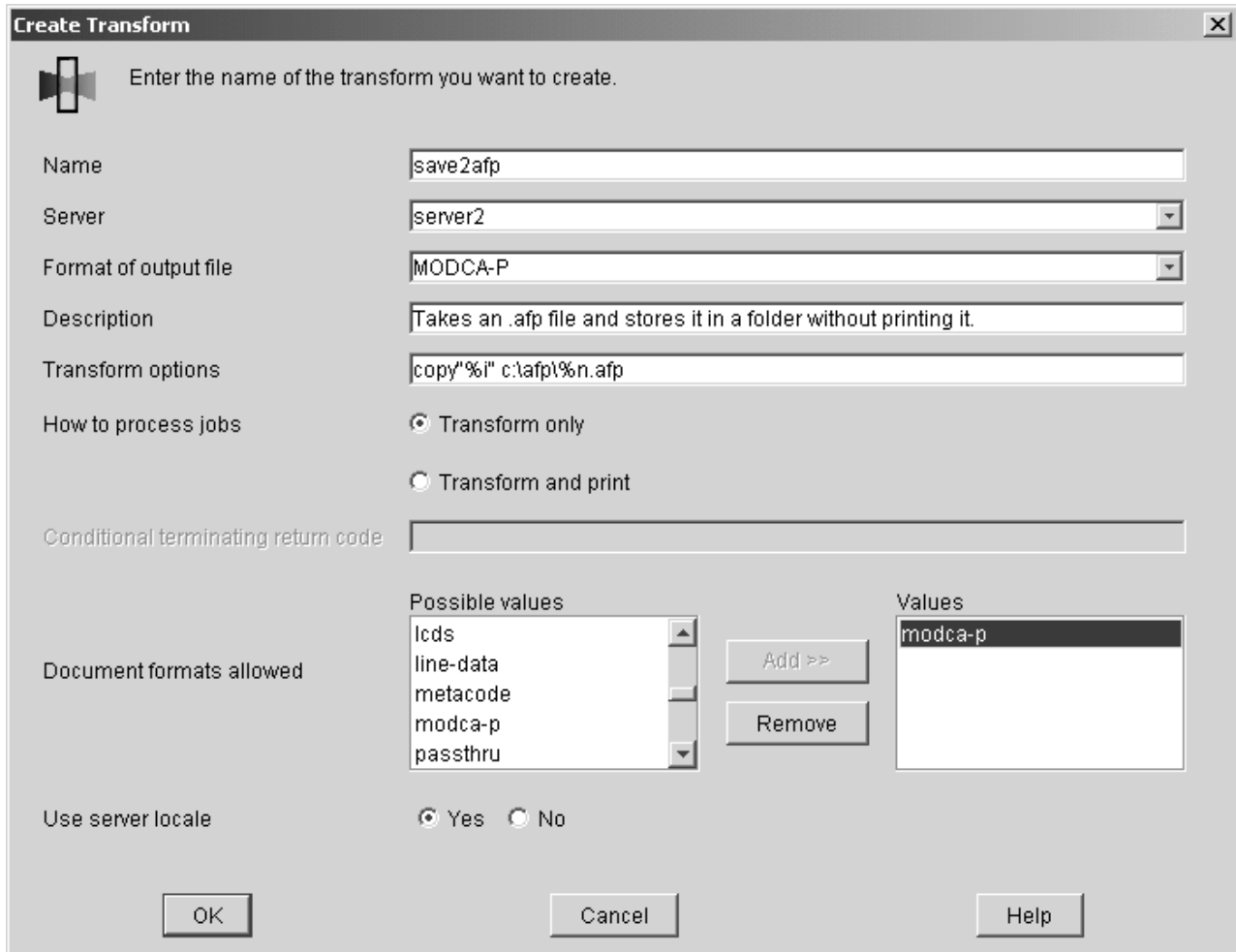


Figure 15. Create Transform dialog: Define a transform that copies an AFP file to a folder without printing on Windows

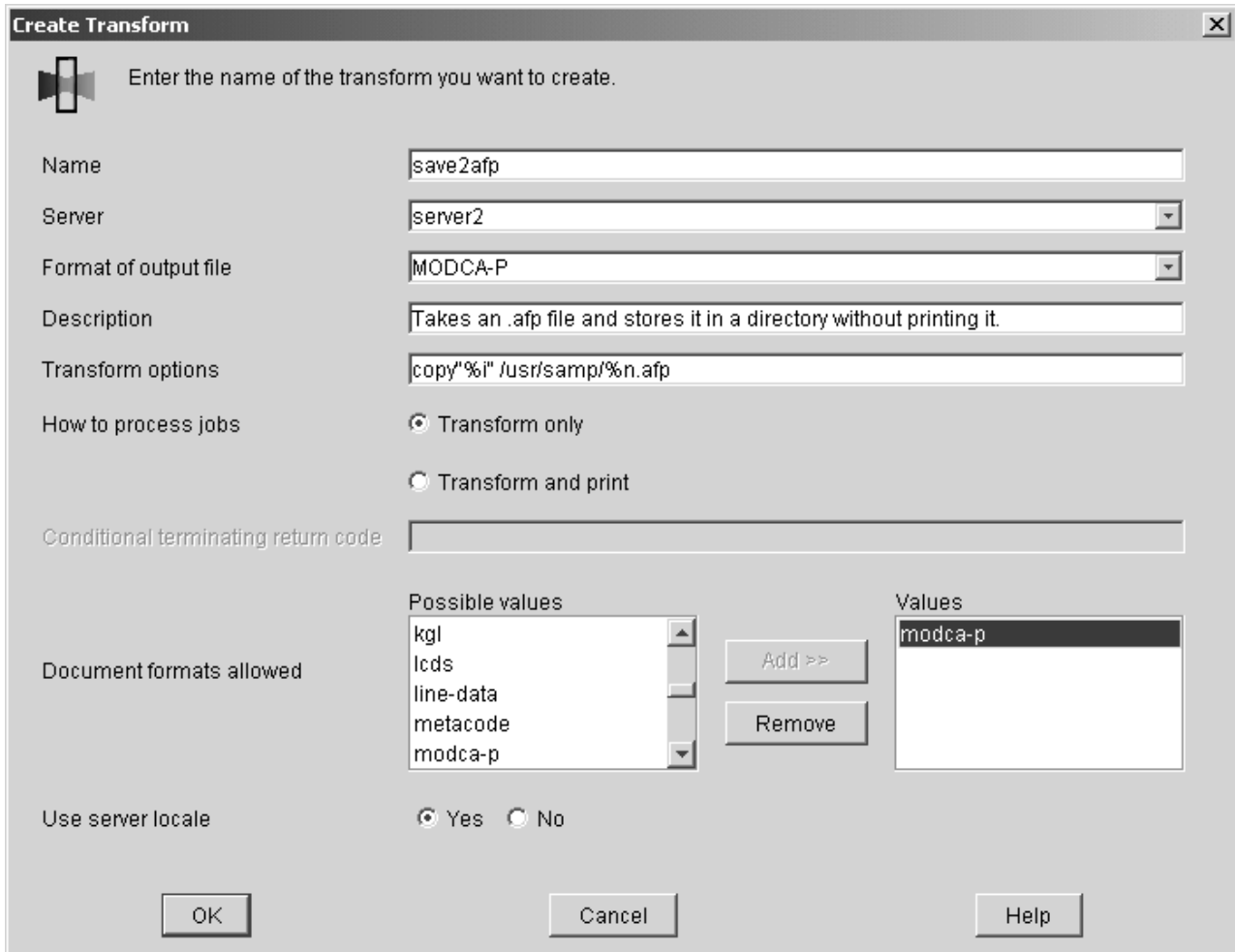


Figure 16. Create Transform dialog: Define a transform that copies an AFP file to a directory without printing on AIX

5. Click **OK**.

InfoPrint Manager creates a transform object under the name you provided in the **Name** field so that you can see its values by selecting **Transform** → **Properties** from the **Servers** menu.

Creating a transform object to convert data and print only smaller files

If your transform might want to terminate the processing of the job in some cases but return data to be printed in other cases, you can create a conditionally terminating transform. For example, you might want to transform and store some documents but transform and return for printing other documents. You can define a return code that your transform can return to indicate when it has completed its task successfully, but is not returning any data for printing.

In the example below, the actual destination activates the **pics2gif** transform when incoming JPEG and TIFF jobs enter the system. These jobs are transformed into GIF format and then uploaded to the Internet by an application outside of InfoPrint Manager. When the transformed GIF files are smaller than 3 KB, they are returned to InfoPrint Manager for printing on a proof printer. To observe cost-cutting mandates across the installation, transformed GIF files that are larger

than 3 KB are not printed. The transform checks the size of the transformed file and sends a return code of 5 if the job is too big to be printed.

To define a data stream transform object from the InfoPrint Manager Administration GUI as a *conditionally-terminating transform*, use this procedure:

1. Start the **InfoPrint Manager Administration GUI**.
2. Click **Server**, and select **Transform → Create**.
3. In the **Create Transform** dialog, fill in the fields as shown in Figure 17. These values create a transform that transforms both JPEG and TIFF input data into GIF output and then provides a return code of 5 if the transform has completed successfully without returning to InfoPrint Manager for printing.

In the **Transform options** field, you can use a series of substitution variables to provide special options for the transform sequences. In this example, besides the standard input (%i) and output (%o), this transform object also uses the %q flag so the InfoPrint server passes the name of the actual destination processing the job.

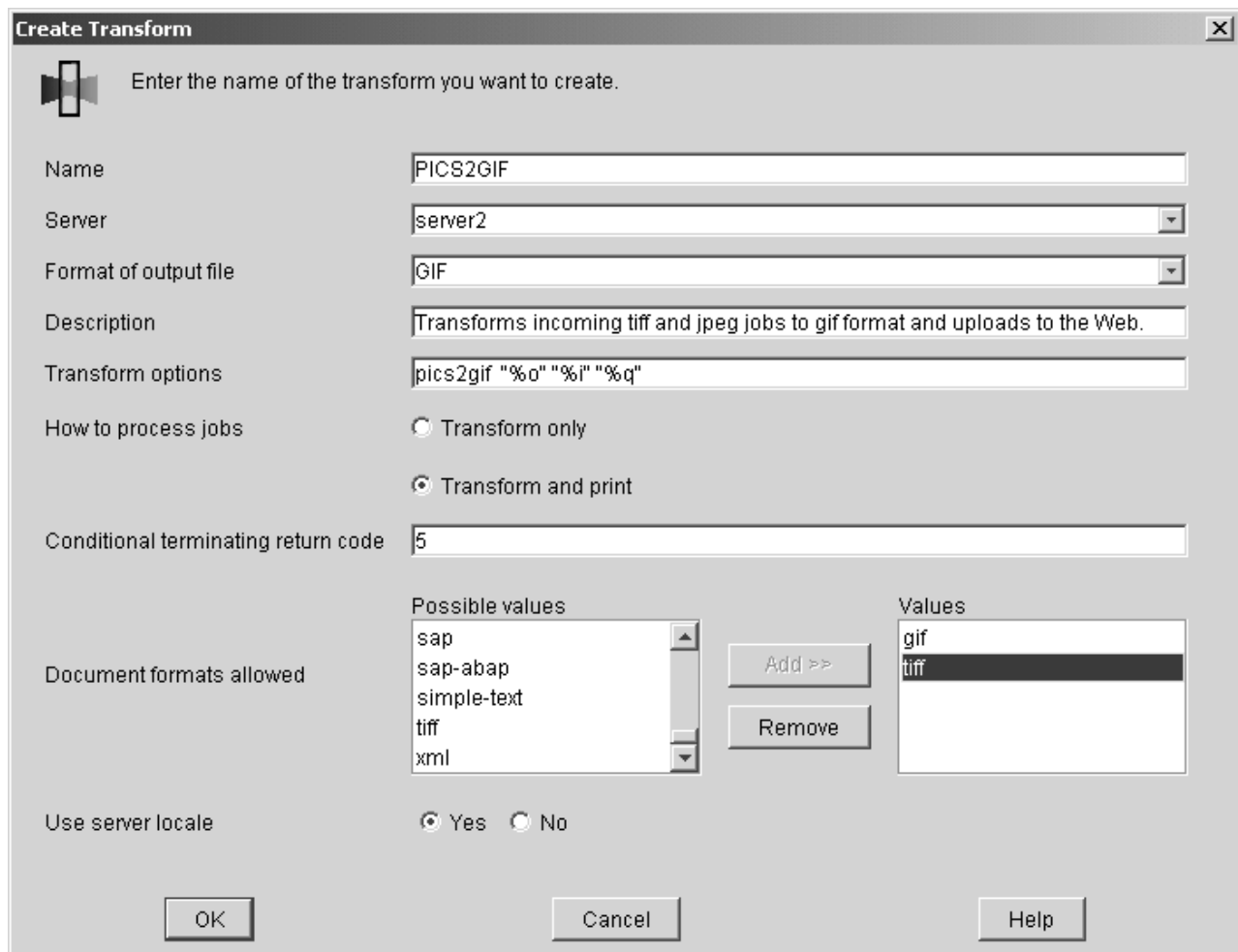


Figure 17. Create Transform dialog: Define a conditionally terminating transform

4. Click **OK**.

InfoPrint Manager saves the transform under the name you provided in the **Name** field so that you can see its values by selecting **Transform → Properties** from the **Servers** menu.

Creating a transform object that updates the job's page count

By default, InfoPrint Manager has no knowledge of the number of pages in a transformed job. However, if you have a transform that knows how many pages are in the job, you can create a transform object that can update InfoPrint Manager with this information. InfoPrint Manager can pass transform objects an *update_file* with the %u option. This *update_file* can be updated with how many pages are in the transformed job, and InfoPrint Manager then updates the job with this information. To modify the *update_file*, the user supplied transform needs to call the *transform_update* utility that is supplied with InfoPrint Manager. For the syntax of the **transform_update** utility, see "Using the *transform_update* utility" on page 221.

To define a data stream transform object from the InfoPrint Manager Administration GUI, use this procedure:

1. Start the **InfoPrint Manager Administration GUI**.
2. Click **Server**, and select **Transform → Create**.
3. In the **Create Transform** dialog, fill in the fields as shown in Figure 18 on page 221.

For this example, the **passvals** program that is called by the **PASSVALUES** transform object gets passed both the **resource-context** document attribute and the **job-owner** job attribute, as well as an update file. You should change the **passvals** program to your transform program that knows how many pages are in the job, and then change the parameters in "Transform options" to what your program expects with the "%u" being the *update_file* that will be passed to the *transform_update* utility when your transform calls it. Other attributes, like **resource-context** and **job-owner**, can be included or omitted as required by the needs of your transform.

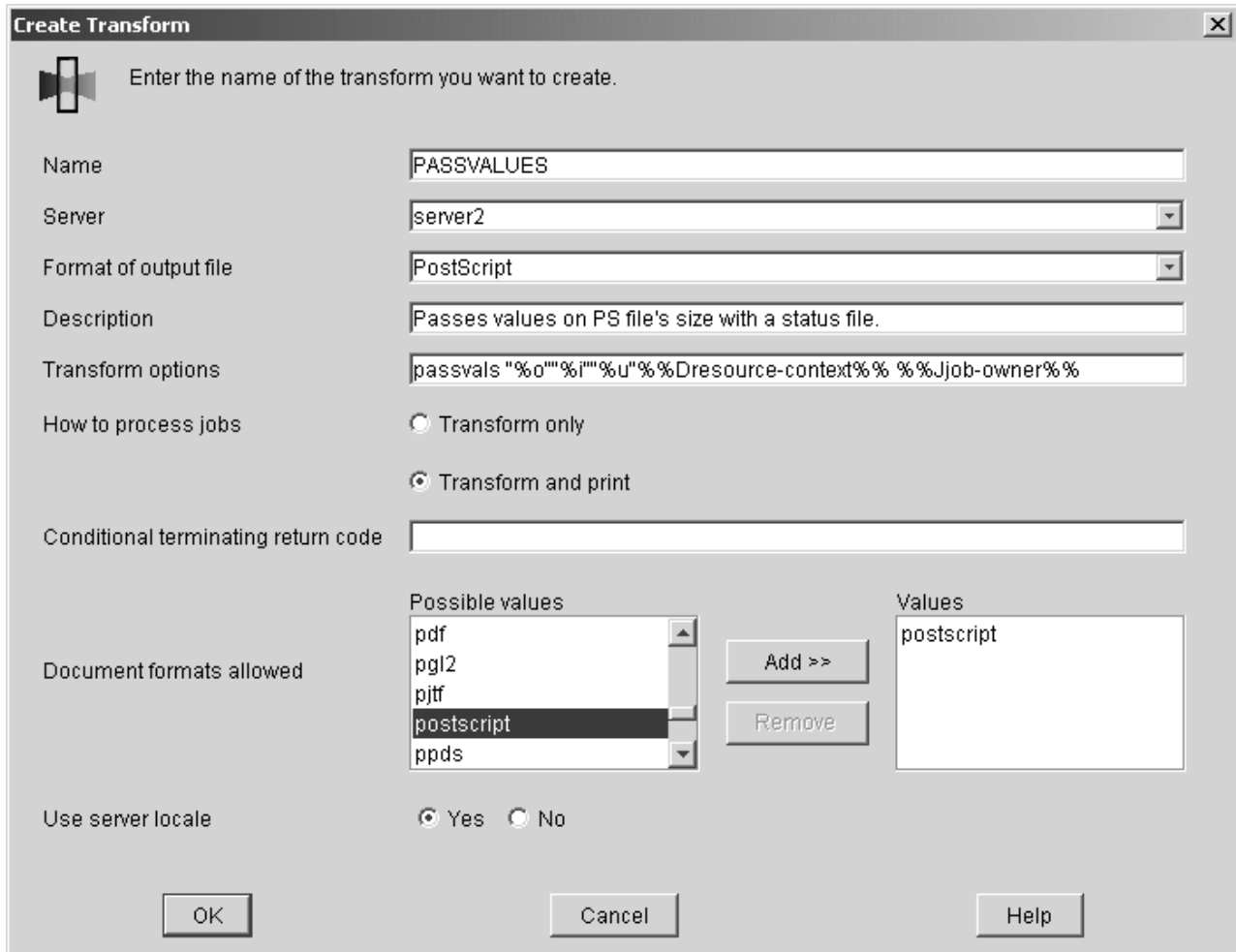


Figure 18. Create Transform dialog: Define a transform to pass job attributes

4. Click **OK**.

InfoPrint Manager saves the transform under the name you provided in the **Name** field so that you can see its values by selecting **Transform → Properties** from the **Servers** menu.

Using the `transform_update` utility

Use the `transform_update` utility to update InfoPrint Manager about the job page count or number of pages completed.

You can use the `%u` transform option to access an update file that lets you update the document page count or the job's **pages-completed** attribute. Never access the file identified with `%u` directly. The transform should only use the `transform_update` utility. InfoPrint Manager only checks for updates while the transform is running and immediately after it completes. The `transform_update` utility can be called either once or multiple times while the transform is running. Once the transform returns, InfoPrint Manager deletes the update file.

The `transform_update` utility provides these return codes:

- 1 An English message for basic problems, including:
 - Invalid option specified.
 - No option or option value specified.

- No status file name specified.
- Cannot open status file named ____.
- Cannot read status file named ____.

0 A successful update

-1 The update of the status file was not successful.

transform_update [-t delta_pages_transformed]
 [-d delta_pages_delivered]
update_file

- t Specifies the number of additional pages since the last update in the transformed document file. InfoPrint Manager uses this information to recalculate the job's **job-page-count** attribute. The total of values that this option passes cannot exceed 2,147,483,647.
- d Specifies the number of additional pages delivered by the transform since the last update. InfoPrint Manager uses this information to update the job's **pages-completed** attribute. The total of values that this option passes cannot exceed 2,147,483,647.

Often, it is unnecessary for transforms to update the **pages-completed** attribute because it indicates how many pages have actually printed or stacked for the job, and this attribute is updated by the print backend in InfoPrint Manager with the number of pages that were printed. Any pages referenced here should have been removed from any file returned to InfoPrint Manager for further processing.

update_file

The file passed to the transform through the %u option.

Notes:

1. If a transform calls the **transform_update** utility more than once, each call should pass a value for the change since the last call, not a cumulative value.
2. If InfoPrint Manager can neither open nor read the file, it logs an error and continues processing.
3. If you use a transform to update the **job-page-count** attribute, you must provide a page-count for the document. This page-count information provided by the transform should be the pages in the transformed document for a single copy of that document.
4. If a transform updates the **pages-completed** attribute and returns a job for printing, the pages the actual destination completes are added to the pages the transform reported it had completed.

Netware.exe

Netware.exe is one of the transform programs that is included with InfoPrint Manager. This program extracts the user ID and job information from the header of PostScript print jobs that are submitted from a Netware server, then strips that header off the job and creates a new header that prints correctly from InfoPrint Manager. **Netware.exe** is a terminating transform, but not because it stores its output in another file. It is a terminating transform because the last step of the program is to issue a **pdpr** command, which submits the job to a logical destination to be printed.

Note to users: `Netware.exe` provides the same function that was available through `netware.cmd` in PSF for OS/2.

Using the Netware print program

From a **Command Prompt** window on an InfoPrint Manager server, you can submit Netware Version 4 Release 1 jobs to an InfoPrint Manager printer. The command removes the Netware-generated Postscript header and submits the job for printing by using the **JobName** and **JobOwner** parameter values from the original header.

To submit a Netware-generated job, type this in a Command Prompt window, substituting the italicized terms with the appropriate values as described below.

```
netware input_name output_file_name log_dest_name
```

input_file

The fully qualified name of the file from Netware 4.1 with a PostScript header.

output_file

The fully qualified name of the file from Netware 4.1 without the PostScript header (after the transform has run).

log_dest_name

The name of the InfoPrint Manager logical destination that the job is submitted to after the PostScript header has been removed.

This example submits a PostScript file from Netware (%i) to be transformed into file without the PostScript header (%o), which is then submitted to a logical destination called **happyprinter1**.

```
netware %i %o happyprinter1
```

Chapter 26. Enabling capture for CMRs

If the jobs that run through your system use the same CMRs, you might want to enable your actual destination to capture inline CMRs.

These inline CMRs must have an object identified (OID) so can capture them.

From the **Administration GUI**:

1. Click on the actual destination and select **Printer** → **Properties**.
2. From the actual destination's **Printer Properties** notebook, click the **Tuning** tab.
3. Find the **Capture inline CMR resources** radio button. If you can't see the **Capture inline CMR resources** radio button, click **Show more**.
4. Scroll to the bottom of the screen and click the **Yes** radio button for the **Capture inline CMR resources** setting.

Chapter 27. Working with fonts

This section describes the fonts required for printing different data formats. It also describes what you must do so that InfoPrint can use them. This material covers these font topics:

- “Fonts for printing transformed PostScript and PDF data”
- “Fonts for printing DBCS ASCII and EUC” on page 234
- “Fonts for printing line data” on page 235

Fonts for printing transformed PostScript and PDF data

The InfoPrint PostScript transform program uses Type 1 outline fonts when transforming PostScript and PDF files. InfoPrint includes the Type 1 outline fonts and these fonts are installed in the *install_path* \ps\fonts path during installation. If you have other Type 1 outline fonts, you can also use them with the transform program.

install_path indicates the path where you have installed InfoPrint Manager. You can view that path from the **Management Console for InfoPrint Manager Server** by clicking on the **Edit** → **Service Configuration** path and checking the **Install path** field.

Note: When InfoPrint runs the PostScript transform program during job submission, it can search other directories for fonts.

The following section contains these topics:

- “Font mapping files”
- “Specifying font substitution through initialization files” on page 229

Font mapping files

A font-mapping file identifies the file names of the Type 1 outline fonts on the Windows operating system. The InfoPrint PostScript transform program requires at least one font-mapping file. InfoPrint installs the default font-mapping file, **fonts.map** in the *install_path*\ps path during installation. If you have other Type 1 outline fonts installed on your system, you can create additional font-mapping files to define their names.

Creating a PostScript font mapping file

When you create your own font-mapping files, consider that:

- You can create more than one font-mapping file.
- At least one font-mapping file must contain the Courier font. The PostScript transform program substitutes Courier for any missing fonts.
- Fonts cannot span network file systems.

Use the InfoPrint **mkfntmap** command to create a font-mapping file for use with the InfoPrint PostScript transform program. You specify one or more input files containing Type 1 outline fonts and a name for the font-mapping file.

For example, to use the input file FontFile and create a font-mapping file named **font.map**, enter:

```
mkfntmap FontFile >font.map
```

Using font-mapping files with the **ps2afp** or **pdf2afp** command

By default, InfoPrint uses the **fonts.map** font-mapping file when you enter the **ps2afp** or the **pdf2afp** command; you do not have to specify the name of the default font-mapping file with the command.

To use font-mapping files that you have created when you issue the **ps2afp** command, you must:

- Enter the path and name of the font-mapping file as the value of the **ps_font_map_files** keyword in the transform daemon configuration file, which is named **ps2afpd.cfg** and located in the *install_path*\ps2afp\ folder. For performance reasons, this is the recommended method. You can specify more than one font-mapping file, if necessary. Separate the font-mapping files with colons.

For example, to specify the font-mapping files **font1.map** and **font2.map**, enter:

```
ps_font_map_files=c:\path\font1.map; c:\path\font2.map
```

- Enter the path and name of the font-mapping file as the value of the **ps_font_map_files** transform command configuration file. Use the same syntax as described for entering the value in the transform daemon configuration file. Using this method can result in significant performance degradation.
- Specify the font-mapping file, including its path name, from the command line using the **-F** flag of the **ps2afp** or the **pdf2afp** command. You can specify multiple files using multiple **-F** flags; InfoPrint concatenates them from left-to-right (first entered to last entered) in that order:

```
ps2afp -F c:\path\font.map -F C:\path2\font2.map
```

This method can also result in degraded performance.

- If the path to the font mapping file contains blanks, you must surround the qualified pathname in double-quotes:

```
ps2afp -F"D:\Program Files\ps\fonts.map"
```

Do not enclose a path that contains spaces in quotes(""); the transform will fail with incorrect font mapping file errors.
- To specify two mapping files in a command, you must make sure that each file's full pathname is specified, as in these examples:

```
ps2afp -F"D:\Program Files\ps\font1.map; D:\Program Files\ps\font2.map"
```

```
ps2afp -F"D:\Program Files\ps\font1.map" -F"D:\Program Files\ps\font2.map"
```

- If you do not specify a drive letter, but expect the transform to find a mapping file using a relative path, the default drive is based on the *install_path* because that is where the **ps2afp** executables reside.

If your file is on the **D:** drive, the command line is on the **C:** drive, and the product is installed on the **E:** drive, InfoPrint attempts to use the **E:\samp1.map** font mapping file:

```
C:\> ps2afp -oout.afp -F\samp1.map d:\incoming.ps
```

However, if you specify this command, InfoPrint attempts to use the **C:\ps\files\samp1.map** font mapping file:

```
C:\ps\files> ps2afp -oout.afp -F\samp1.map d:\incoming.ps
```

If you create your own font mapping file -- either by using the **mkfntmap** command or manually -- and the path to the fonts contains blanks, the font

mapping file needs to double-quote the paths as well. For example, if your fonts reside in `E:\Program Files\ps\fonts`, the font-mapping file could have any of these variations:

PATH:

```
"E:\Program Files\ps\fonts"
```

FONT:

```
AvantGarde-Book AvantGarde-Book
```

FONT

```
AvantGarde-Book "E:\Program Files\ps\fonts\AvantGarde-Book"
```

Note: You can use either the `ps2afp -F` or the `pdf2afp -F` command flag or the `ps_font_map_files` keyword in the transform command configuration file to specify a font-mapping file. If the value from those three sources is different than that specified in the transform daemon configuration file, the transform daemon restarts the PostScript interpreter so that the new value for the font-mapping file takes effect for that one job. However, restarting the PostScript interpreter decreases performance, because the interpreter is restarted again with the font-mapping file in the configuration file for the very next PostScript job.

Specifying font substitution through initialization files

You can issue specific PostScript commands to specify whether printers substitute fonts for those defined in job tickets that are neither inline with the job nor resident on the printer. To do this task, modify the `UserInit` file that is located in the `install_path\ps` file system.

To make sure that fonts not inline with the job or resident on your printer substitute Courier fonts to allow the job to print, specify this in the `UserInit` file:

```
%!
```

```
turnFontSubstitutionOn
```

To make sure that fonts not inline with the job or resident on your printer do not print, specify this in the `UserInit` file:

```
%!
```

```
turnFontSubstitutionOff
```

Using OpenType Fonts

This section describes what you need to use OpenType Fonts for printing with InfoPrint Manager.

These fonts offer many benefits over printing with standard font resources. They provide users with these benefits:

- A wide range of non-Latin typefaces from which to choose
- A multilingual presentation environment through the support of Unicode

- A migration path towards a single font technology across all presentation environments

OpenType Fonts have these three characteristics in the font file:

1. A Microsoft Unicode version of Version 3 Release 1.
2. Microsoft Unicode Full Font Names
3. A Unicode character map (CMAP)

A CMAP defines the mapping of code points to glyph indices, which are used to index the actual character shape information.

If your fonts do not contain all these elements, they cannot be used with InfoPrint Manager. If the InfoPrint AFP Resource Installer (Program Number 5639-EE2) does not install a font, that font does not meet this criteria.

Note: You can use the standard AFP code pages you use for other font resources with OpenType fonts. For more information about doing this task, see *Using OpenType Fonts in an AFP System*.

Using the Resource Installer to install OpenType fonts

If you have OpenType fonts, you must install them using the InfoPrint AFP Resource Installer (Program Number 5639-EE2). If you create a new library or subdirectory for these fonts, you must also update the global search path on your InfoPrint Manager server. If you place them in an existing subdirectory, InfoPrint Manager should already have this location in its global search path.

Each time you either add new OpenType fonts or modify existing ones, you must reinstall them with the Resource Installer to make sure that InfoPrint Manager can access them correctly. The search order of directories for a data object font resources is the same as the search order for AFP font resources. Make sure that the path where you install the OpenType Fonts is in the font search order that InfoPrint Manager uses. For more information about how the font search order is defined see “The search order for AFP resources” on page 62.

An administrator installs the OpenType fonts in a particular directory on each system. On an AIX server, the default path for installing these fonts is the **/usr/lpp/ipfonts** directory. On a Windows server, the default path is set up by the administrator who configured the system.

Once the OpenType fonts have been installed through the IBM Infoprint Fonts for Multiplatforms product, you must run the Resource Installer to create the Resource Access Table (**IBM_DataObjectFont.rat**) and store it in the same directory where the fonts reside. The Resource Installer does not prompt you to do this task because the Resource Installer is not aware of changes to the directory. As a result, the system administrator who installed the new fonts must do this task whenever fonts are either added or removed from the directory.

The Resource Access Table contains an entry for each installed font so that InfoPrint Manager can access it.

For more information about how to use the Resource Installer of Infoprint Fonts, either access the online help system of the Resource Installer or see *Using OpenType Fonts in an AFP System*.

Using font capture with OpenType fonts

Font capture allows a printer to capture a downloaded font and treat it as if it were a printer-resident font. Treating a downloaded font as a printer-resident font improves performance for future jobs that use the same fonts. Printers retain captured fonts across job boundaries and power cycles. Captured fonts can be deleted from the printer when additional space is required. Because OpenType fonts are large, you might want to make sure that your InfoPrint printer is set to support font capture.

If you want to capture OpenType fonts that reside in a library on a particular drive, click the Font Installer's **Capture** check box. (far right column of the Top pane) for each font that you want to capture. For more information, consult the Resource Installer online help system.

Note: Do not capture sensitive fonts, such as signatures, because an unauthorized person could access the captured font, even from another system.

Enabling font capture for inline fonts

If the jobs that you run through your system use the same fonts, you might want to enable your actual destination to capture inline font resources. These inline fonts must have an object identifier (OID) so InfoPrint can capture them.

Note: For many systems, this procedure is not recommended because captured inline fonts can be deleted when your printer needs more storage. If InfoPrint Manager cannot access these fonts, the jobs can either fail or print incorrectly.

From the **InfoPrint Manager Administration GUI**:

1. Click the actual destination and select **Printer** → **Properties**.
2. From the actual destination's **Printer Properties** notebook, click **Tuning**.
3. Find the **Capture inline OTF resources** radio button. If you can't see it, click **Show more**.
4. Scroll to the bottom of the screen and select the **Yes** radio button for the **Capture inline OTF resources** setting.

Using multiple fonts with limited printer memory

When you are using the OpenType fonts and you receive the Out of memory error message, you can decrease the **Maximum fonts to keep** configuration item for InfoPrint Manager or increase the size of the character cache from the Printer console.

To decrease the number of **Maximum fonts to keep**, complete these steps:

1. Right-click the actual destination in the InfoPrint Manager GUI and click **Properties**.
2. Click **Tuning**.
3. Find and change the **Maximum fonts to keep** value to a smaller number, such as 5.

To increase the character cache size from the Printer's console, complete these steps:

1. Click **Printer Definition**.

2. Click **Printer**.
3. Click **Resource Utilization**.
4. Increase **Font Usage** to the highest setting.

Using Unicode extended code pages

Unicode Extended Code Pages (ECP) are code pages with additional information used by OpenType and TrueType fonts. This is an introduction for using extended code pages:

- If OpenType and TrueType fonts are used without ECP, Unicode scalars must be defined in the hardcoded GUM (GCGID-to-Unicode-Mapping, where GCGID stands for Graphic Character Global Identifier) table resident in the printer or code points will be undefined. While the use of predetermined mappings might meet many needs, if customization of GCGID to Unicode mappings is required, an extended code page must be used.
- The extended code pages can be used on printers that do not support the extensions. However, the extensions will be stripped out of the code page as it is downloaded to the printer appearing as if an unextended code page was used.
- The extended code pages are files on disk just like unextended code pages. The search order defined in the *InfoPrint Manager: Reference* in the description of the resource-context-font attribute still applies. However, a new file extension of .ECP is supported for all code pages. Inside the same directory, a code page with the .ECP file extension will be selected before any other code page with a matching name but a different file extension.
- File extensions are secondary search criteria. The search order of directories is the primary search criterion when searching for any code page resource, including Unicode extended code pages. The first possible match on the resource name is used. For example, there might be two code pages called T1USV500.ECP and T1USV500. The T1USV500.ECP code page is located in a directory only specified by resource-context. The T1USV500 code page is located in a directory specified in resource-context-font. In this case, the T1USV500 code page is used. Conversely, if T1USV500.ECP and T1USV500 are located in the same directory, the T1USV500.ECP code page is used.
- Code pages created or modified by the AFP Resource Installer will always have an .ECP file extension. Use installation software to manage the installation of this new kind of resource.
- To force a code page to be downloaded instead of using a printer resident code page and to prevent run-time substitution of code pages, follow this procedure "Using the 'no resident' version of the sample grid files" on page 246.

Updating the global search path on an InfoPrint Manager Windows server

To update the global search path on an InfoPrint Manager Windows server, follow these steps.

Note: If you do not update the global search path, you must update each actual destination that you use to print OpenType fonts.

1. To start the InfoPrint Manager Management Console, click the Windows **Start** button and select **Programs** → **InfoPrint Manager** → **Management Console**.
2. Stop the InfoPrint Manager server by selecting **File** → **Stop Server**.

Note: If you are not able to stop the server because you are not authorized for that action, check the InfoPrint Manager Access Control List (ACL) for the **Shutdown** operation. Log off and log back on as a user who is on the access control list.

3. Select **Edit** → **Service Configuration**.
4. Update both the **Default Font Search Path** field and the **Default Resources Search Path** fields with the directory where the OpenType fonts reside.

Using OpenType fonts with line data

When printing line data with OpenType fonts through InfoPrint Manager, you need to specify the appropriate parameters on the **line2afp** command. To define the location of the OpenType fonts to the **line2afp** command, you can either use the InfoPrint Manager global search path (using “Updating the global search path on an InfoPrint Manager Windows server” on page 232) or use the appropriate values on the **line2afp** command. For more information about these values, see either *Using OpenType Fonts in an AFP System* or *ACIF: User’s Guide*.

For more information about either creating or modifying page definitions for line data jobs to print with OpenType fonts, see *Page Printer Formatting Aid: User’s Guide*.

Limitations when printing line data with OpenType fonts

Before you can print this data, you must transform it to Unicode Transformational Format (UTF-16), with big-endian byte order. Big-endian byte order means that in a two-byte UTF-16 code point the high-order byte is specified first, followed by the low-order bytes. You can transform it through the **uconv** utility, or any other application that transforms ASCII to Unicode. For more information about the **uconv** utility see the AIX operating system documentation.

Line data using OpenType fonts supports using the Byte Order Mark (BOM) and little endian data

InfoPrint Manager can process the Unicode Byte Order Mark (BOM) when printing line data with OpenType fonts. (For UTF8 or UTF16-BE data, the BOM is skipped and not printed. For UTF16-LE, the data is reversed to BE before it is printed, and the BOM is not printed.) In addition, InfoPrint Manager can now recognize multi-byte carriage return and line feed characters when parsing Unicode line data.

This support lets you process UTF8 and UTF16 line data in either little-endian or big-endian order using a traditional line data or record-format page definition. As many Windows and AIX editors default to UTF8 or UTF16LE encodings and automatically insert a BOM at the beginning of the file, you can now print documents created with these editors using Unicode-enabled Open Type Fonts.

Mixed mode data is line data mixed with MODCA structured fields. You can use mixed mode data with UTF8, UTF16LE, and UTF16BE with a BOM as long as the BOM is the first bytes (following any cc or trc bytes) of the first line of data.

To mix UTF8 or UTF16BE data with other data encodings, you can do that if there is **no** BOM. In this case, the font selected for the data tells InfoPrint Manager the data encoding. You can’t do this with UTF16LE data because it always requires a BOM.

This support includes a **-o newlineencoding** flag for the **-o** flag, a **stream,(newline=characters,encoding)** value for the **fileformat** parameter on the

line2afp transform, and a **new-line-option-data-encoding** document/default document attribute. For more information about this support, see *InfoPrint Manager: Reference*.

Fonts for printing DBCS ASCII and EUC

In ideographic languages, like Japanese, Chinese, and Korean, there are thousands of characters. A single byte of information cannot represent all of these characters because a single byte only accommodates 256 characters. Therefore, at least one more byte of information is required.

For DBCS ASCII files, each ideographic character is either one byte or two bytes for each character. For Extended UNIX Code (EUC) files, each ideographic character can be two, three, or four bytes, depending on the EUC implementation and language. Single-byte ASCII characters can be mixed in with DBCS ASCII and EUC characters.

InfoPrint supports printing DBCS ASCII and EUC files in these formats:

- DBCS ASCII files in the Japanese and Traditional Chinese languages, which can contain formatting controls for the InfoPrint 5577 or 5587 printers.
- EUC files in the Japanese, Traditional Chinese, and Korean languages. EUC files cannot contain any formatting control characters.

The following section contains these topics on printing with DBCS Fonts:

- Fonts required to print a double-byte transformed file
- Installing DBCS fonts on Windows 2000
- Setting up font resources for DBCS ASCII and EUC printing
- Printing Japanese DBCS messages at the end of a job

Fonts required to print a double-byte transformed file

You can use the **db2afp** transform command to transform input files that use these code pages:

- Japanese PC (code page IBM-932)
- Japanese EUC (code page IBM-eucJP)
- Traditional Chinese PC (code page IBM-950)
- Traditional Chinese EUC (code page IBM-eucTW)
- Korean EUC (code page IBM-eucKR)

The transformed files contain font references to the double-byte character set. You set the character set and code page you want by either setting the **PSFDBLANG** environment variable or using the **default-character-mapping** default document attribute defined in the *InfoPrint Manager: Reference*. When using the **default-character-mapping** default document attribute, you must also specify **document-format=debs-asci i** for each applicable document or default document.

To set the **PSFDBLANG** environment variable, see the **Determining what code page your print jobs use and setting the correct environment variable** section in Chapter 24, "Working with transforms," on page 179.

After you have used the **db2afp** command to transform DBCS ASCII and EUC files to AFP data stream files, you must have access to DBCS fonts when you print the

transformed files. The DBCS fonts for Japanese, Traditional Chinese, and Korean are available with *Infoprint Fonts*, which is a separately orderable feature of InfoPrint Manager.

Installing DBCS fonts on Windows

To make the fonts available to InfoPrint on your system once you have the licensed programs, you can use the Windows licensed programs to install the fonts, or copy the fonts to a particular directory on your Windows system.

Setting up font resources for DBCS ASCII and EUC printing

To print the transformed files that contain font references to the double-byte character set, you must make the double-byte fonts known to InfoPrint through one of these methods:

- Create a **resource-context** object that identifies the location of the double-byte fonts and associate the **resource-context** object with a default-document object and an InfoPrint logical destination. Using this method makes the fonts known to InfoPrint for any job submitted to the logical destination associated with the default-document object.
- Add the drives and specific folders to the search path for actual destinations using this procedure from the **InfoPrint Administration GUI**:
 1. From the **InfoPrint Administration GUI** main window, highlight the actual destination.
 2. From the main menu, select the **Printer → Properties** path to open the selected printers' **Printer Properties** window.
 3. From the **Printer Properties** window, click **AFP Resources**.
 4. From **AFP Resources**, you can specify the fully qualified path where the double-byte fonts are in the **Location of Resources** field.

This makes the fonts known to InfoPrint for any job processed by this actual destination.

Printing Japanese DBCS fonts at the end of a job

You can have DBCS messages print in Japanese at the end of each DBCS print job. As with printing any DBCS jobs, you must have already installed the appropriate DBCS fonts on your system, and your printer must be DBCS-enabled. Also, you must have installed the font from the *AFP Font Collection – Japanese Fonts* CD-ROM to support printing the Japanese DBCS message page. If you have installed this prerequisite and can print DBCS output in Japanese, this support is enabled and messages print in Japanese automatically.

Please note that if you do not install the appropriate fonts, InfoPrint Manager defaults to printing the appropriate message in English.

Fonts for printing line data

When you specify a coded font name with the **chars** keyword of the **line2afp** command or with the **chars** document attribute, the font name is limited to four characters, excluding the two-character prefix.

This table provides a list of the IBM Expanded Core Fonts for use with unformatted ASCII input data. InfoPrint stores these coded fonts in the

install_path\fontlib path. There are copies of the eight-character names that correspond to the six-character names that reside in the same location.

For the names of other coded fonts, see *IBM AFP Fonts: Font Summary*.

Table 26. IBM Expanded Core Fonts

| Type Family | Point Size | Coded Font Name | Short Name (for chars keyword) |
|-----------------|------------|-----------------|--------------------------------|
| Courier | 7 | X0423072 | X04272 |
| Courier | 8 | X0423082 | X04282 |
| Courier | 10 | X0423002 | X04202 |
| Courier | 12 | X04230B2 | X042B2 |
| Courier | 14 | X04230D2 | X042D2 |
| Courier | 20 | X04230J2 | X042J2 |
| Helvetica | 6 | X0H23062 | X0H262 |
| Helvetica | 7 | X0H23072 | X0H272 |
| Helvetica | 8 | X0H23082 | X0H282 |
| Helvetica | 10 | X0H23002 | X0H202 |
| Helvetica | 11 | X0H230A2 | X0H2A2 |
| Helvetica | 12 | X0H230B2 | X0H2B2 |
| Helvetica | 14 | X0H230D2 | X0H2D2 |
| Helvetica | 16 | X0H230F2 | X0H2F2 |
| Helvetica | 18 | X0H230H2 | X0H2H2 |
| Helvetica | 20 | X0N230J2 | X0N2J2 |
| Helvetica | 24 | X0N230N2 | X0N2N2 |
| Helvetica | 30 | X0H230T2 | X0H2T2 |
| Helvetica | 36 | X0H230Z2 | X0H2Z2 |
| Times New Roman | 6 | X0N23062 | X0N262 |
| Times New Roman | 7 | X0N23072 | X0N272 |
| Times New Roman | 8 | X0N23082 | X0N282 |
| Times New Roman | 9 | X0N23092 | X0N292 |
| Times New Roman | 10 | X0N23002 | X0N202 |
| Times New Roman | 11 | X0N230A2 | X0N2A2 |
| Times New Roman | 12 | X0N230B2 | X0N2B2 |
| Times New Roman | 14 | X0N230D2 | X0N2D2 |
| Times New Roman | 16 | X0N230F2 | X0N2F2 |
| Times New Roman | 18 | X0N230H2 | X0N2H2 |
| Times New Roman | 20 | X0N230J2 | X0N2J2 |
| Times New Roman | 24 | X0N230N2 | X0N2N2 |
| Times New Roman | 30 | X0N230T2 | X0N2T2 |
| Times New Roman | 36 | X0N230Z2 | X0N2Z2 |

Printing with the DBCS Simulation Fonts with the font metric adjustment triplet

PTF UO00352 includes support for printing the DBCS Simulation Fonts (available with Infoprint Fonts for Multiplatforms, Version 1 Release 1 Modification 0, Program Number 5648-E77) with the font metric adjustment triplet. The DBCS Simulation Fonts are available on the AIX and Windows operating systems.

Note: When you use the DBCS Simulation Fonts, set the **requested-font-resolution** appropriately or use the NORES grid files.

Chapter 28. Working with global resource identifiers

InfoPrint can identify the fonts required for a job, access AFP font files that are installed on or NFS-mounted to your Windows system, and download the appropriate fonts to an InfoPrint-managed printer device. However, some InfoPrint printers can use fonts that are resident in the printer, which saves the time it takes to download these fonts. Because the font files on the Windows system do not share the same names as the printer-resident fonts, InfoPrint uses global resource identifiers (GRIDs) to map the system-resident fonts to the printer-resident fonts.

Uses of GRID files

GRID files contain preassigned mappings that you can modify to map system-resident font file names to printer-resident font identifiers. These preassigned mappings include both single-byte character set (SBCS) and double-byte characters set (DBCS) outline fonts.

If you have a printer that supports outline fonts, you can use the GRID files to map raster character-set names to outline font global identifiers.

GRID files also support Mixed Object Document Content Architecture for Presentation (MO:DCA-P) files that specify fonts using GRIDs rather than character-set names. You can customize the GRID files to define which fonts InfoPrint uses when the data stream of the job specifies GRIDs.

Note: If a data stream specifies only GRID parts instead of specific names, the **fgid.grd** table is used to find the name of the font to download or the outline font to activate. In this case, the data stream must specify a specific width value

GRID files that come with InfoPrint Manager

InfoPrint Manager provides four GRID files that you can customize to use with the types of printer devices that you have and the types of jobs that you print. These files are **charset.grd.sample**, **codepage.grd.sample**, **cpgid.grd.sample**, and **fgid.grd.sample**, and they are installed in the `<install path>\grid` directory.

Note: You can either shut down and restart the InfoPrint server (**pdserver** process) or shut down and restart all your printers to make sure that **.grid** file changes are applied.

Descriptions of each file are provided below.

charset.grd.sample

Specifies which printer-resident fonts are activated for the character-set names found in the data stream of the job.

This file maps the font character-set name to a:

- Font global identifier (**fgid**)
- Graphic character set global identifier (**gcsgid**)
- Font width
- Vertical size value
- Set of font attributes (bold, italic, and doublewide)

Figure 19 shows an example of the format of a line in the character set sample file.

```
# FCS name -> fgid gcsgid width vsize attr #
#-----#
C0L00GSC 398 - 96 120 - # GOTHIC CONDENSED 1
```

Figure 19. Sample File for a Character Set

codepage.grd.sample

Specifies which printer-resident fonts are activated for the code page names found in the data stream of the job.

This file maps a code page to the:

- Code page global identifier (**cpgid**)
- Graphic character set global identifier (**gcsgid**)

Figure 20 shows an example of the format of a line in the code page sample file.

```
# code page name -> cpgid gcsgid #
#-----#
T1000038 38 123 # US-ASCII Character Set 1
```

Figure 20. Sample File for a Code Page

fgid.grd.sample

Specifies which font character set InfoPrint should download when substituting for a global resource identifier that it finds in the data stream of the job.

This file maps these to a font character set (FCS) name:

- A font global identifier (**fgid**)
- A graphic character set global identifier (**gcsgid**)
- A font width
- A vertical size value

Figure 21 shows an example of the format of a line in the font global identifier sample file.

```
# fgid gcsgid width vsize -> FCS name #
#-----#
3 0 144 240 C0E0DE10 # DELEGATE 12 POINT 1
```

Figure 21. Sample File for a Global Identifier

cpgid.grd.sample

Specifies which code page InfoPrint should download when substituting for a global resource identifier that it finds in the data stream of the job.

This file maps a code page global identifier and a graphic character set global identifier to a code page name. Figure 22 shows an example of the format of a line in the code page identifier sample file.

```
# cpgid gcsgid -> code page name #
#-----#
29 0 T1V10871 # OLD ICELANDIC 1
```

Figure 22. Sample File for a Code Page Identifier

For a detailed explanation of how the different types of identifiers combine to produce fonts, see *AFP Fonts: Font Summary*.

If you have a job that specifies a font that is not resident on your printer, you can use the GRID files to map the missing font to one with the same point size that does reside on your printer. To understand what resident fonts your printer device has, consult both your printer documentation and *Advanced Function Presentation: Printer Information*.

InfoPrint search order for GRID files

InfoPrint searches these directories, in the order shown, for GRID files:

1. An internal list that matches the **charset.grd.sample** file.
2. **<install path>\grd**
3. **<install path>\var\psf\printername**, where *PrinterName* is the name of a valid InfoPrint actual destination.

Note: When the same mapping is found in one of these files, InfoPrint uses the last one.

When you install InfoPrint Manager, sample GRID files are installed in the **<install path>\grd** directory. You can maintain a central location for new or modified GRID files for specific printers by storing files in the **<install path>\var\psf\PrinterName** directory.

If you are mapping raster fonts to outline fonts, you can map multiple names to the same GRID part so that different sized fonts can apply to your print job.

Notes:

1. The new or modified GRID files you create have the same names as the sample files except that you delete **.sample** from each file name.
2. After creating or modifying GRID files, you must shut down and restart the physical printer represented by *PrinterName* for the changes in the file to take effect.

Understanding the general syntax rules and allowable values for GRID files

To tailor the InfoPrint-supplied GRID files for your own system needs, you need to understand the general syntax rules for the four GRID files and the allowable values for the fields in the files.

Syntax rules that apply to all types of GRID files

GRID files are simple ASCII text files that you can modify using any standard text editor. These rules apply to all of the GRID files.

- No line in the file can contain more than 255 characters
- Fields in a line must be separated with one or more delimiters (spaces)
- The pound sign (#) indicates the start of a comment, which causes InfoPrint to ignore the remainder of that line
- A dash (-), indicates the absence of a particular value, for which InfoPrint substitutes a zero (0)
- An asterisk (*) indicates that a wildcard value (any numeric decimal) is accepted.

- InfoPrint ignores blank lines and extraneous fields

Allowable values for the `charset.grd` file

You can specify these values for fields in the GRID file for a character set for a font:

fgid

Identifies the character set identifier for the font. Specify a numeric value from 1 to 65534 or enter a dash (-) to disable the mapping of this character set to GRID values.

gcsgid

Identifies a global identifier for the font. Specify a numeric value from 0 to 65534 or enter a dash (-) to specify no **gcsgid**. If you specify an asterisk (*), InfoPrint issues an error message.

width

Identifies the width specified in the character set. Specify a numeric value from 0 to 65534 or enter a dash (-) to specify no width. If you specify an asterisk (*), InfoPrint issues an error message.

vertical_size

Identifies the vertical size specified in the character set. Specify a numeric value from 0 to 65534 or enter a dash (-) to specify no vertical size. If you specify an asterisk (*), InfoPrint issues an error message.

attribute_field

Indicates the attributes of the character set. Specify a lowercase b (bold), i (italic), d (doublewide), or enter a dash (-) to specify no attribute.

Allowable values for the `codepage.grd` file

You can specify these values for fields in the GRID file for a code page for a font:

cpgid

Identifies the code page identifier for the font. Specify a numeric value from 1 to 65534 or enter a dash (-) to disable the mapping of this character set to GRID values.

gcsgid

Identifies a global identifier for the code page. Specify a numeric value from 0 to 65534 or enter a dash (-) to specify no **gcsgid**. If you specify an asterisk (*), InfoPrint issues an error message.

Allowable values for the `fgid.grd` file

You can specify these values for fields in the GRID file for a font global identifier:

fgid

Identifies the global identifier for the font. Specify a numeric value from 1 to 65534 or enter an asterisk (*) to indicate a wildcard value. If you specify a dash (-), InfoPrint issues an error message.

gcsgid

Identifies the global identifier for the font. Specify a numeric value from 0 to 65534 or enter an asterisk (*) to indicate a wildcard value. If you specify a dash (-), InfoPrint issues an error message.

width

Identifies the number of characters per horizontal inch. Specify a numeric

value from 1 to 65534 or enter an asterisk (*) to indicate a wildcard value. If you specify a dash (-), InfoPrint issues an error message.

vertical_size

Identifies the vertical size of the font. Specify a numeric value from 1 to 65534 or enter an asterisk (*) to indicate a wildcard value. If you specify a dash (-), InfoPrint issues an error message.

Allowable values for the cpgid.grd file

You can specify these values for fields in the GRID file for a code page global identifier:

cpgid

Identifies code page identifier for the font. Specify a numeric value from 1 to 65534.

gcsgid

Identifies the global identifier for the font. Specify a numeric value from 0 to 65534 or enter an asterisk (*) to indicate a wildcard value. If you specify a dash (-), InfoPrint issues an error message.

Modifying GRID files

The following section describes the two ways you can modify GRID files to support the printer devices and types of jobs in your production printing environment.

Note: If you are using InfoPrint Manager to print from either the 6400 and 6500 series in both native and 4234 emulation mode, you must modify both the **charset.64xx.grd** and the **codepage.64xx.grd** files as described in “Modifying the charset and codepage GRID files” and “Modifying the FGID and CPGID GRID files” on page 244.

Modifying the charset and codepage GRID files

You can avoid having InfoPrint download fonts by adding font entries that map the font character set or code page that is most referenced in jobs to a global identifier for a resident font.

For example, if your jobs specify the Prestige 10-point font, which is character set C0S0PR10, and that font is not available you can map the Prestige 10-point font to a similar font that is either resident on your printer or available for InfoPrint to download to your printer. In this procedure, you map the Prestige 10-point font to Gothic 10-point font, character set C0D0GT10.

Do these steps:

1. Open the file `<install path>\grid\charset.grd.sample` in a text editor such as Notepad.
2. Click **File** → **Save as**. Rename the file **charset.grd** and save it into the `<install path>\var\psf\PrinterName` directory, where *PrinterName* is the name of the InfoPrint actual destination representing the actual device.
3. Edit the **charset.grd** file you just created. Copy this line for the Gothic 10 point printer-resident font:

```
C0D0GT10 40 - 144 240 # GOTHIC TEXT 10
```

4. Change the first entry in the copied line (in the **FCS name** column) to the character set identifier of the Prestige 10 point font that you want to map to the Gothic 10 point font. You can change the comment at the end of the copied line to identify the mapping change you are making.


```
COS0PR10 40 - 144 240 # PRESTIGE 10 mapped to GOTHIC TEXT 10
```
5. Search the remainder of the **charset.grd** file to make sure that it contains no other COS0PR10 entries. A later entry of the same character set would replace the entry you just made.
6. Save your changes and close the file.

If you want to print jobs that specify the personal computer ASCII codepage for Iceland, T1000861, but that codepage is not available, you can map codepage T1000861 to the personal computer multilingual codepage for ASCII data, T1000850.

Do these steps:

1. Open the file `<install path>\grd\codepage.grd.sample` in a text editor such as Notepad.
2. Click **File** → **Save as**. Rename the file **codepage.grd** and save it into the `<install path>\var\psf\PrinterName` directory, where *PrinterName* is the name of the InfoPrint actual destination representing the actual device.
3. Edit the **codepage.grd** file you just created and copy this line for the personal computer multilingual codepage for ASCII data:


```
T1000850      850      980 # PC MULTILINGUAL
```
4. Change the first entry in the copied line (in the **code page name** column) to the codepage identifier of the personal computer ASCII codepage for Iceland that you want to map to the multilingual codepage. You can change the comment at the end of the copied line to identify the mapping change you are making.


```
T1000860      850      980 # ICELAND MAPPED TO MULTILINGUAL
```
5. Search the remainder of the **codepage.grd** file to make sure that it contains no other T1000860 entries. A later entry of the same character set would replace the entry you just made.
6. Save your changes and close the file.

Modifying the FGID and CPGID GRID files

You can add new entries to map your GRID data to the resident fonts in your printer by modifying either the **fgid.grd.sample** file or the **cpgid.grd.sample** file. If you have a printer that does not support the outline font technology (such as the InfoPrint 3835 Advanced Function Printer), we recommend that you map all the *CZnnnn* entries to raster font character-set names. If you do not create this mapping, InfoPrint issues an error message and does not print the job.

For example, to map the Times New Roman Latin 1 character set to the raster version, follow these steps.

1. Open the file `<install path>\grd\fgid.grd.sample` in a text editor such as Notepad.
2. Click **File** → **Save as**. Rename the file **fgid.grd** and save it into the `<install path>\var\psf\PrinterName` directory, where *PrinterName* is the name of the InfoPrint actual destination representing the printer device.
3. Edit the file that you just created and copy this line:


```
2308    2039 * *   CZN200      # Times New Roman Latin1
```

4. Change the entry in the **FCS name** column to CON20000.


```
2308 2039 * * CON20000 # Raster version of TNR Latin 1
```
5. Save your changes and close the file.

After this substitution, InfoPrint prints jobs that specify the font character-set name CZN200 and that processed on the physical printer for which you made the change using the raster version of the font. The CZN200 character set now maps to:

- An FGID of 2308
- A GCSGID of 2039
- A vertical size of 65535
- A width of 0

Note: For more information about the different values available for font character sets and code pages, see "IBM Font Interchange Information" in *InfoPrint Data Stream and Object Architectures Mixed Object Document Content Architecture Reference*.

Because the InfoPrint 3835 Advanced Function Printer does not support any resident outline fonts, the **fgid.grd.sample** file maps the **FGID** and the **GCSGID** back to the CON20000 character set. Then, InfoPrint searches the resource library search path to locate the CON20000 character set for downloading with the job.

To modify the **cpgid** file so that the personal computer ASCII codepage for Iceland maps to the multilingual codepage for ASCII data as described in "Modifying the charset and codepage GRID files" on page 243, do these steps:

1. Open the file `<install path>\grid\fgid.grd.sample` in a text editor such as Notepad.
2. Click **File** → **Save as**. Rename the file **cpgid.grd** and save it into the `<install path>\var\psf\PrinterName` directory, where *PrinterName* is the name of the InfoPrint actual destination representing the printer device.
3. Edit the **cpgid.grd** file you just created and copy this line for the personal computer multilingual codepage for ASCII data:


```
850 980 T1000850 # PC MULTILINGUAL
```
4. Change the first entry in the copied line, in the **cpgid** column, to the codepage identifier of the personal computer ASCII codepage for Iceland font that you want to map to the multilingual codepage. You can change the comment at the end of the copied line to identify the mapping change you are making.


```
861 980 T1000850 # ICELAND MAPPED TO MULTILINGUAL
```
5. Search the remainder of the **cpgid.grd** file to ensure that it contains no other 861 entries. A later entry of the same character set would replace the entry you just made.
6. Save your changes and close the file.

Verifying the GRID files

During physical printer initialization, InfoPrint examines the contents of the GRID files. If InfoPrint detects any syntax errors, it reports an error condition and fails to enable the physical printer. To correct these errors, you must edit the GRID files that fail. For information about what files, lines, or fields are in error, you must access the GRID **error.log** file for the physical printer, which is located in `<install path>\var\psf\PrinterName`.

Preventing InfoPrint from using GRID files

If you have a 300-pel printer but you print 240-pel jobs, the printer-resident fonts might have different line spacings and endings in the printed output. For some types of billing statements, these line endings are inappropriate. You can solve this problem by preventing InfoPrint from using the GRID files, which in turn keeps InfoPrint from using printer-resident fonts.

1. Rename your customized GRID files. For example, open Windows Explorer and navigate to the `<install path>\var\psf\PrinterName` directory, where `PrinterName` is the InfoPrint actual destination that you don't want to use GRID files with. Find the `charset.grd` file and right-click it. From the pop-up menu, select **Rename** and change the name to `charset.grd.bak`.
2. Open the file `<install path>\grid\charset.grd.sample` in a text editor such as Notepad.
3. Click **File** → **Save as**. Rename the file `charset.grd` and save it into the same `<install path>\var\psf\PrinterName` directory that you were working with in step 1.
4. Edit the `charset.grd` file and place a dash (-) in the `fgid` column.
5. Save your changes and close the file.
6. Open the file `<install path>\grid\codepage.grd.sample` in a text editor such as Notepad.
7. Click **File** → **Save as**. Rename the file `codepage.grd` and save it into the same `<install path>\var\psf\PrinterName` directory that you were working with in step 1.
8. Edit the copied `codepage.grd` file and place a dash (-) in the `cpgid` column.
9. Save your changes and close the file.

Using the 'no resident' version of the sample grid files

There can be situations when you do not want InfoPrint Manager to use printer-resident fonts.

If you do not have customized GRID files and want to use the 'no resident' version of the sample grid files shipped with InfoPrint Manager, complete this procedure:

1. From a DOS prompt:

```
cd <install path>\var\psf\PrinterName
```

Where `PrinterName` is the name of the InfoPrint physical printer that represents the actual printer device.

2. Create the `charset.grd` file from the `charset.grd.nores` file:

```
copy <install path>\lpp\psf\grid\charset.grd.nores charset.grd
```
3. Create the `codepage.grd` file from the `codepage.grd.nores` file:

```
copy <install path>\lpp\psf\grid\codepage.grd.nores codepage.grd
```

Chapter 29. Generating and submitting color mapping table source and output files

A color mapping table is a printer resource object that defines a translation from certain MO:DCA structured fields to new color structured fields used by newer printers. Color mapping tables are used to provide highlight color attachments to black-and-white printers, such as using the InfoPrint 4005 attachment with the InfoPrint 4000 printer. You can also use a color mapping table to map highlight colors into richer colors on a color printer like the InfoPrint Color 130 Plus printer or the InfoPrint 4100 when printing with highlight colors. To apply color to black and white documents, you must use the following procedure to create Color Mapping Table Source (.src) and Output Files. See "InfoPrint administrative utilities" in "InfoPrint Manager Tools" chapter of the *InfoPrint Manager: Reference* for information about the **cmt** utility. You can define translations from non-color fields to color, old color fields to new color fields, and from new color fields to different new color fields. Therefore, you can use existing applications and documents with new color fields without having to change the documents or applications. Also, you can use various color mappings with a single document to print the document using color in different ways without changing the original document.

The sample configuration file named **cmt.cfg** file should be available in the *install_path***config** directory and the **cmt** utility should be available in the *install_path***bin** directory on your Infoprint Server. Using the AFP architectural reference, you can apply color to existing black and white documents.

Note: A MOD:CA sample color mapping table produces from the sample **cmt.cfg** file is provided in *install_path***config****cmtsampl**.

The **cmt** utility lets you create color mappings in a variety of different color modes that are defined through the **ColorSpace** parameter. For example, the **Highlight** value can be used when printing to an InfoPrint 4000 printer with an Highlight Color Model HC2 Post-Processor (HCPP). For more information about HCPP, see the InfoPrint Hi-Lite Color Printer: Library Catalog at the URL <http://www.infoprint.com>.

Parts of a color mapping table

A color mapping table consists of a base part, a set of source groups, and a set of target groups. The base part identifies the color mapping table with a type of either reset or normal.

The simplest possible color mapping table is a reset color mapping table that tells the printer to do no transformations on the color information found in the document. A reset color mapping table has no source or target groups; all other color mapping tables have at least one source and one target group.

Using source groups

Each source group has an identification (ID) number that is used to match the source group with a corresponding target group. You can have unique ID numbers; however, if you create the color mapping table without the **cmt** utility and want to

map several source groups to a single target group, you can use the same ID number on multiple source groups. Valid ID values are 1–127.

Note: The **cmt** utility generates pairs of sources and targets, then assigns increasing, sequential IDs to each pair. For more information about the **cmt** utility, see the *InfoPrint Manager: Reference*.

Each source group must be classified as one of these color spaces:

Highlight color

Highlight color is used when your existing documents describe color in terms of the percent to be covered and the percent to be shaded for a color number. The colors are device dependent. For example, you might have a printer that allows the use of three colors for highlighting. You could specify percent coverage and percent shading for colors 1, 2, or 3. Your printer setup would determine the actual colors.

Standard Object Content Architecture (OCA)

Standard OCA uses defined combinations of red, green, and blue to create: blue, red, pink, magenta, green, turquoise/cyan, and yellow. Standard OCA also defines several defaults such as white on a black medium, black on a white medium, and the same color as the medium. The medium could be, for example, paper or a display.

GOCA pattern fill

GOCA pattern fill defines patterns for filling areas that you might want to map to colors with a color mapping table.

For detailed explanations about these color spaces, see *Mixed Object Document Content Architecture Reference*.

You can use a color mapping table to pick specific object types to map, such as:

- Object area
- IM image data
- PTOCA data
- Page presentation space
- GOCA data
- Overlay presentation space
- BCOCA data
- IOCA data (bi-level, FS10)
- All PTOCA, GOCA, BCOCA, IOCA, FS10, and IM object data
- All objects, object areas, and presentation spaces

After you pick the color spaces and object types you want to map, you can specify exact values for the fields you want to map.

Using target groups

If you create the color mapping table without the **cmt** utility, you must specify a target group ID number to match the source groups for a target. Valid ID values are 1–127.

Note: The **cmt** utility generates pairs of sources and targets, then assigns increasing, sequential IDs to each pair. For more information about the **cmt** utility, see the *InfoPrint Manager: Reference*.

Each target group must be classified as a color space that is the kind of color you want as output. The color spaces defined in the matching source groups are transformed to this color space. The color mapping table allows RGB CMYK, highlight, and CIELAB, but your actual hardware determines your available choices. For example, if your printer supports only highlight color, your target group must use highlight color.

You can specify exact values for output colors. For example, if your printer supports three highlight colors, you can specify colors 1, 2, or 3 with coverage and shading percentages that are supported by your printer.

Other publications that have helpful references regarding color devices include:

- *InfoPrint 4005 Hi-Lite Color Application Design Reference*, available from your InfoPrint Solutions Company marketing representative.
- *InfoPrint Hi-Lite Color Introduction and Planning Guide for 4005*.

Creating a color mapping table

In the procedure described below, we create a color mapping table to print an Advanced Function Presentation (AFP) file that contains pie charts in the color green.

For our AFP files, this pie chart appears as a series of horizontal lines. By reviewing the chapter on "Graphic primitives and attributes" in the *Graphics Objects Content Architecture for Advanced Function Presentation Reference* manual, we can see that these horizontal lines are created by a Pattern Output Primitive with a hexadecimal value of '0B'(11).

To turn these horizontal lines into a shade of green when using a **ColorSpace** source group of GOCA to map to a target group value of RGB, make sure that you specify a low value for red (12), a high value for green (252), and a value under 50 for blue (42) to provide a clear contrast.

You must do these tasks from the Windows command line:

1. From the **install_path\config** directory, specify:
copy cmt.cfg piel.cfg

This copies the Color Mapping Table configuration file into a file you can customize for your own purposes (in this case, piel.cfg)

2. Specify notepad piel.cfg.

This lets you edit the configuration file and insert the applicable values to create the appropriate color mapping (whether GOCA to RGB or OCA to CIELAB) table. See the sample **cmt.cfg** configuration file below:

```
# -----  
# Required, starts a Color Mapping Definition.  
# One definition for each Source to Target mapping.  
# -----  
# -----  
# BeginSourceDef:  
# Required, starts the Source Parameters  
# -----  
BeginSourceDef:  
# -----  
# ColorSpace:  
# Required, values= OCA | Highlight | GOCA  
# -----
```

```

ColorSpace: GOCA
# -----
# ColorValue:
# Required, values depend on Color Space
# -----
ColorValue: 11
# -----
# ObjectType:
# Optional, values= ObjArea | ImageData | PTOCData |
# GOCADData | BCOCADData | A11OCA | Page | Overlay |
# ObjsAll
# default= ObjsAll
# -----
ObjectType: GOCADData
# -----
# PercentShading:
# Optional, only valid for SourceColorSpace: Highlight,
# values= 0 .. 100, 255 (all percentages),
# default= 100
# -----
# PercentShading:
# -----
# PercentCoverage:
# Optional, only valid for SourceColorSpace: Highlight,
# values= 0 .. 100, 255 (all percentages),
# default= 100
# -----
# PercentCoverage:
# -----
# EndSourceDef:
# Required, ends the Source Parameters
# -----
EndSourceDef:
# -----
# BeginTargetDef:
# Required, starts the Target Parameters
# -----
BeginTargetDef:
# -----
# ColorSpace:
# Required, values= RGB | CMYK | Highlight | CIELAB
# -----
ColorSpace: RGB
# -----
# ColorValue:
# Required, values depend on Color Space
# -----
ColorValue: 12 252 42
# -----
# PercentShading:
# Optional, only valid for TargetColorSpace: Highlight,
# values= 0 .. 100, default= 100
# -----
# PercentShading:
# -----
# PercentCoverage:
# Optional, only valid for TargetColorSpace: Highlight,
# values= 0 .. 100, default= 100
# -----
# PercentCoverage:
# -----
# EndTargetDef:
# Required, ends the Target Parameters
# -----
EndTargetDef:

```



```
# -----
# Required, ends a Color Mapping Definition.
# -----
# EndMappingDef:
```

3. Once you have finished editing the `pie1.cfg` file, save the file.
4. To create the Color Mapping Table object (MOD:CA) file that will be used when you submit the job for printing, run the `cmt` utility as the input file (`-i` flag):

```
cmt -i pie1.cfg -o pie1.out
```

This command produces a `pie1.out` output file.

Submitting jobs using a Color Mapping Table

To submit a job using the color mapping tables for spot color, you must make sure that you also specify a resource-context attribute so that the server knows the location of the color mapping table. Once you have configured a Color Mapping Table, you must have defined a logical destination (named `prt1` for this example) to which you can send the job.

Submitting jobs through the Windows command line

Once the logical destination has been defined, you can submit a job to an InfoPrint Manager printer by specifying this from the command line:

| Command Values | Meaning |
|--|--|
| <code>pdpr -d prt1</code> | Print Command with logical destination name. |
| <code>-x job-name=gocajob</code> | Name of the AFP file you submit for printing. |
| <code>-x resource-context=/usr/lpp/psf/cmt/</code> | Explicit path name for the Color Mapping Table object files. |
| <code>-x color-mapping-table=pie1.out</code> | Color Mapping Table that you created in "Creating a color mapping table" on page 249 for printing this file. |
| <code>install_path\psf\cmt\goca.afp</code> | Explicit pathname where the print file is located in. |

Configuring an actual destination with the InfoPrint Manager Administration GUI

To configure an actual destination to use the appropriate Color Mapping Table:

1. From the **InfoPrint Administration Servers** main window, enable the appropriate actual destination (in this case, `NewP`, as shown below) by right-clicking the actual destination and then selecting **Enable**.

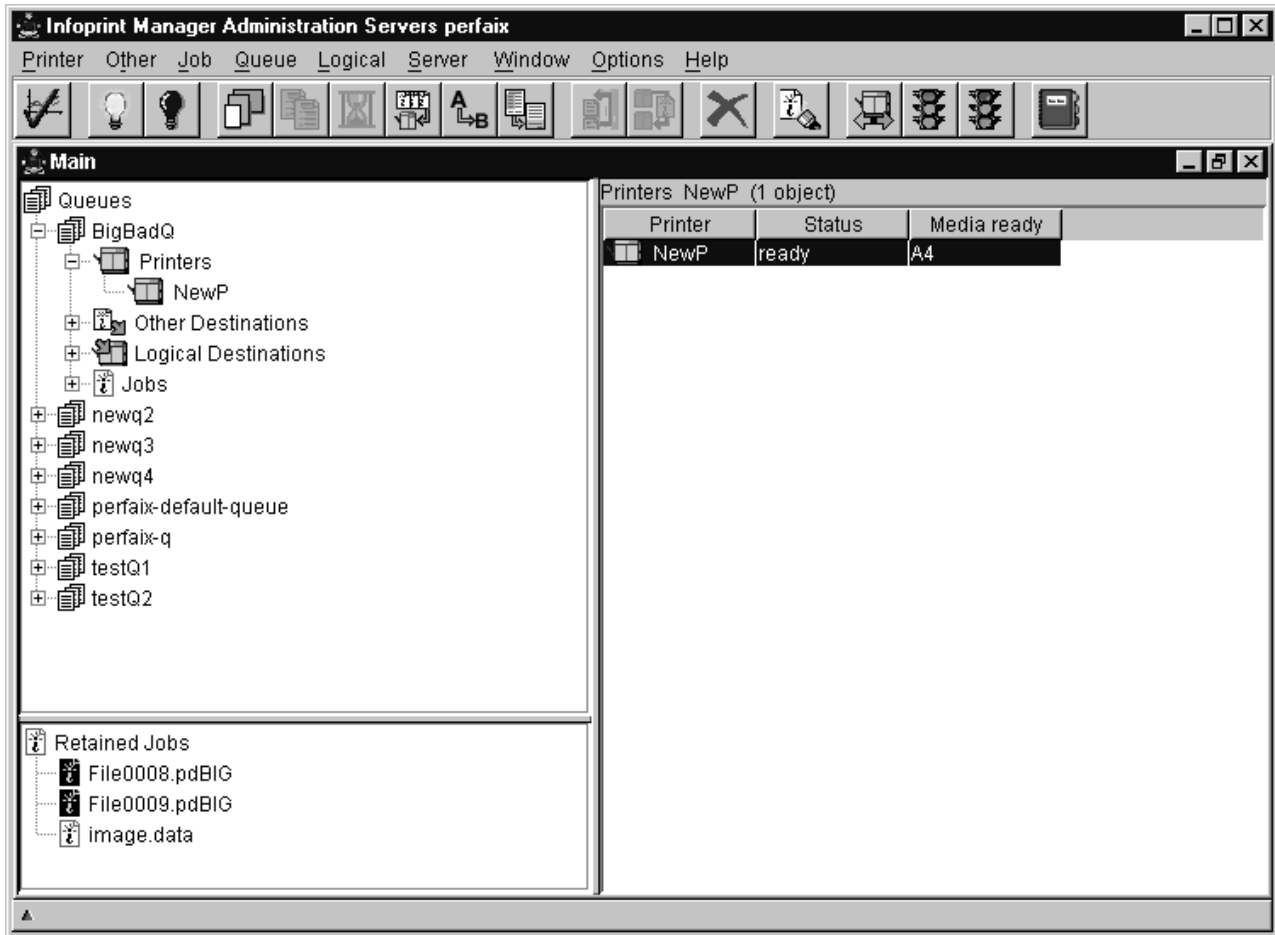


Figure 23. InfoPrint Administration Servers main window

2. Make sure that the **Color mapping table** (pie1.out) has been specified on the AFP Color tab of the Printer Properties notebook and that the **Location of resources** (*install_path*\config) has been specified on the AFP Resources tab:

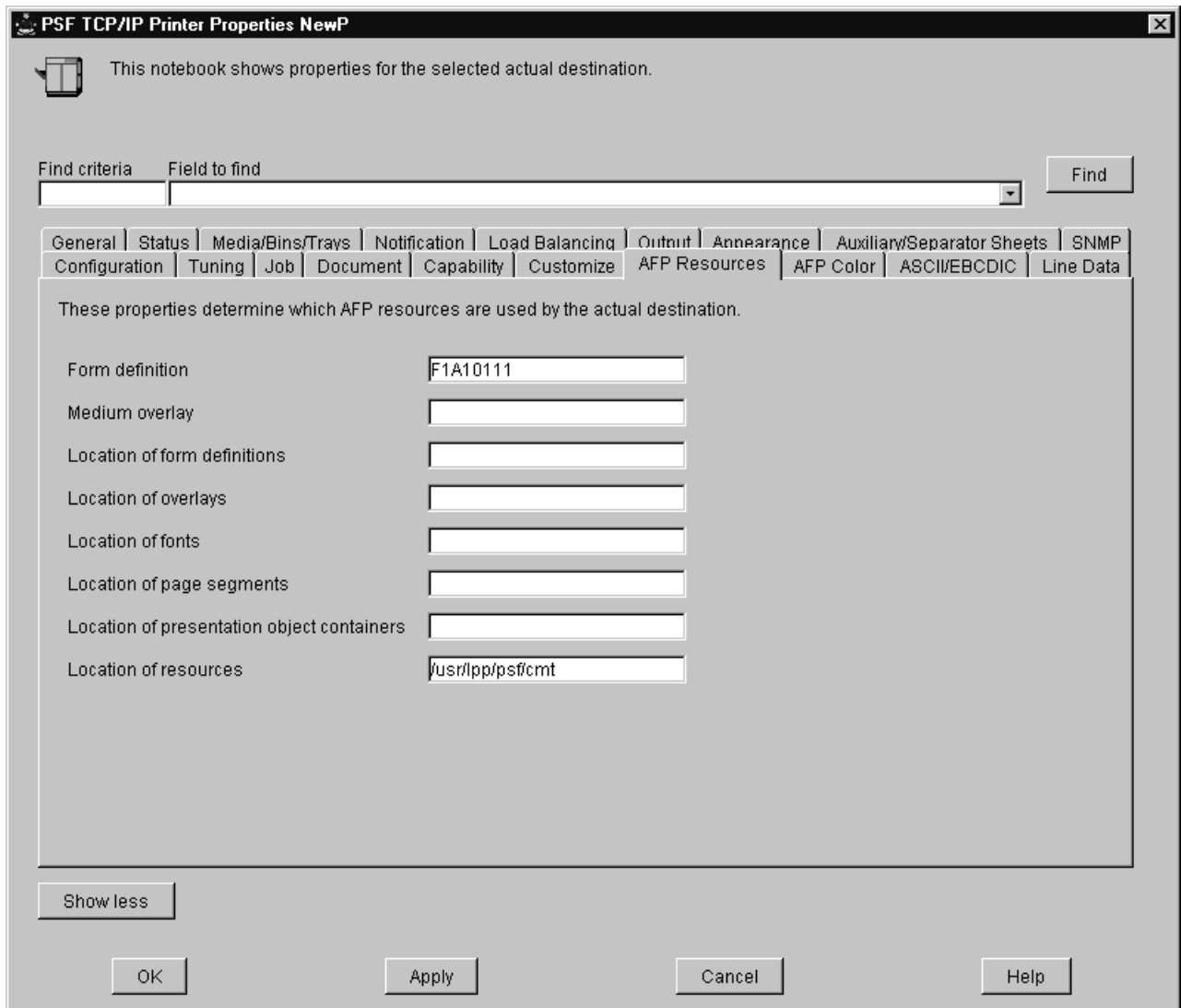


Figure 24. Printer Properties notebook

3. Submit your job to InfoPrint Manager, using either the command line or the InfoPrint Select client.

Using the InfoPrint Select client with Color Mapping Tables

In InfoPrint Select, specify the name of the Color Mapping Table as the job or document default as appropriate.

Chapter 30. Configuring the Halftone Management System

The Print on Demand feature offers the Halftone Management System (HMS). The HMS supports printer calibration on devices such as the InfoPrint 20 and the InfoPrint 4000 series. The Halftone Management System gives you the ability to calibrate halftones for each screen frequency on most Intelligent Printer Data Stream (IPDS) printers. The result is consistent grayscale for each appearance selection. For a complete list of supported printers, see the **calibd.src** file located in the **/usr/lpp/pd/ipca1/server** directory.

With the Halftone Management System, you can run multiple InfoPrint 4000 and 4100 printers and calibrate each system. For two-engine duplex print systems, the Halftone Management System also lets you calibrate each print engine separately, so that whatever document you print, the various levels of gray (grayscale) used to print the document will look the same on both engines. Note that this applies to input file types of TIFF, GIF, JPEG, PostScript, and Portable Document Format (PDF).

From the smallest network printer to the largest production printer, you can either use the halftone provided with InfoPrint Manager or create your own. You can calibrate for different paper types to account for differences between supplies. InfoPrint Manager will save and manage these calibrations, allowing you to select them on a job-by-job basis.

The Halftone Management System consists of two parts that are only installed with the Print-on-Demand feature:

1. A client process that can be run from any InfoPrint for AIX server.
2. A server process that runs on all InfoPrint for AIX servers.

You can calibrate printers on any InfoPrint AIX server by using the client from another InfoPrint AIX server. For example, if you have installed InfoPrint servers A, B and C, you can calibrate printers on A using the client on either A, B or C. The daemon must be running on server A.

This section describes the procedures that you should make sure have been completed before attempting to use the Halftone Management System:

1. "Starting the Halftone Management System" on page 257
2. "Calibrating a densitometer" on page 257

Using the correct halftones for the installed toner version

Multiple versions of toner are available for the InfoPrint 4000 and InfoPrint 4100 printers. For some printer models, InfoPrint Manager ships different halftone curves for different toners, and provides scripts to replace or install the correct ones. Make sure you have the correct halftone installed for your toner to achieve the best print quality.

The toner characteristics can require changes in the halftone resources. When the toner in the printer is replaced with a different version of toner, you must run the associated Windows bat file from the command line.

Notes:

- When you apply InfoPrint Manager PTFs, the appropriate Windows bat file must be run again, because the PTF replaces the existing halftone files with the standard halftone files.
- Some versions of toner do not require different halftones. Therefore, a Windows bat file might not be available.

The bat files are installed in **install_path\config**

- IP4000-ID5-6.Std
- IP4000-ID5-6.V2toner
- IP4000-ID5-6.V3toner
- IP4000-IR1-2.Std
- IP4000-IR1-2.V2toner
- IP4000-IR1-2.V3toner
- IP4000-IR3-4.Std
- IP4000-IR3-4.V2toner
- IP4000-IR3-4.V3toner
- IP4100-HD3-HD4.RTtoner
- IP4100-HD3-HD4.Stdtoner
- IP4100-HD3-HD4.V3toner
- IP4100-HD3-HD4.V5toner
- IP4100-MD1-2.Stdtoner
- IP4100-MD1-2.V2toner
- IP4100-MD1-2.V2_PQItoner
- IP4100-PD1-2.Std
- IP4100-PD1-2V3toner

Each bat file changes the InfoPrint Manager system to use the relevant toner; Std or Stdtoner is the default.

Limitations of actual screen frequencies and angles on InfoPrint 4000 and 4100 printers

If you change the version of toner used with your printer, you should recalibrate all customized calibration curves to make sure that they print correctly. The screen frequencies shown in this section presume the use of a 600 dots per inch (DPI) printer. Frequencies at other DPI are proportionally lower. For example, an 85 lines per inch (LPI) screen used on a 300 DPI printer will be 43 LPI. Screen frequencies match the requested screen frequency as closely as possible, based on constraints of the halftone design.

For the actual screen frequencies and angles for both InfoPrint 4000 and InfoPrint 4100 printers, see Table 27, Table 28 on page 257, and Table 29 on page 257.

Table 27. Screen Frequencies for InfoPrint 4000 IR3/IR4 and ID5/ID6 and InfoPrint 4100 HD3/HD4 and HS2 printers with Version 3 Toner

| | | | | |
|--|-------|-----|--------|-----|
| Submit Screen Frequency (LPI) | 71 | 85 | 106 | 141 |
| Actual screen frequency (LPI) | 74 | 85 | 96 | 117 |
| Actual Screen Angle (Default ° Set) | 35.5° | 45° | 51.3 ° | 59° |

Table 27. Screen Frequencies for InfoPrint 4000 IR3/IR4 and ID5/ID6 and InfoPrint 4100 HD3/HD4 and HS2 printers with Version 3 Toner (continued)

| | | | | |
|-------------------------------|-------|-----|-------|-----|
| Actual Screen Angle (90° Set) | 54.5° | 45° | 38.7° | 31° |
|-------------------------------|-------|-----|-------|-----|

Table 28. Screen Frequencies for InfoPrint 4000 IR3/IR4 and ID5/ID6 and InfoPrint 4100 HD1/HD2, HD5/HD6, PD1/PD2, HS1, HS3, and PS1 printers with Version 2 (enhanced printing toner) or Standard Toner

| | | | | |
|-------------------------------|-----|-----|-----|-----|
| Submit Screen Frequency (LPI) | 71 | 85 | 106 | 141 |
| Actual screen frequency (LPI) | 71 | 85 | 103 | 141 |
| Actual Screen Angle | 45° | 45° | 31° | 45° |

Table 29. Screen Frequencies for InfoPrint 4000 IR1/IR2 Printers with Version 2, 3, or Standard Toner

| | | | | |
|-------------------------------|-----|-----|-----|-----|
| Submit Screen Frequency (LPI) | 71 | 85 | 106 | 141 |
| Actual screen frequency (LPI) | 71 | 83 | 106 | 141 |
| Actual Screen Angle | 45° | 34° | 45° | 45° |

Starting the Halftone Management System

The Halftone Management System that is included with the InfoPrint Manager POD feature is not started with an icon or shortcut on InfoPrint Manager for Windows.

Use these steps to start the Halftone Management System:

1. Go to the **Start** menu.
2. Go to **Programs**.
3. Go to **InfoPrint Manager**.
4. Select **Start Halftone Management Server**.
5. Repeat steps 1 through 3, and then select **Start Halftone Management Client**.

If the InfoPrint Manager Server has already been defined in the Halftone Management System and the Halftone Management System client is started when the Halftone Management System Server is not running, InfoPrint Manager issues this message: **Error in connecting to host *yourhostname* - Connection refused**. When this happens, start the Halftone Management System server.

Calibrating a densitometer

The reflection densitometer must be calibrated to provide accurate density readings. Before using, you must follow the instructions that are provided by the manufacturer to calibrate the densitometer. The densitometer used must comply to the spectral responses defined by ANSI PH2.18 - 1985 and ISO 5/3 - 1984. The densitometer should not have a polarizing filter. The Greyttag Macbeth model D19C has a polarizing filter and should not be used. Densitometers which are appropriate to use include the X-Rite Model 504, 508, or 400B.

The densitometer should be used in Absolute Density mode for measurements. This procedure describes how to calibrate the X-RITE 400B (1060) densitometer,

using the Reflection Reference Card (part number 400-62). Since the X-RITE 400B is now obsolete, this information is provided as reference.

The Reflection Reference is the card you use to calibrate the densitometer. You will use only the circular patches labeled 1 (white reference) and 3 (black reference). The densitometer should be calibrated periodically, or whenever the instrument displays RECAL. You should store the Reflection Reference Card in its envelope.

1. Press the **FUNCTION** and **ENTER** keys in sequence, then release.
After the version and copyright notices appear, the display will show N cal O Y.
2. Press the **ZERO** key and release.
After the version and copyright notices appear, the display will show N qcal Y.
3. Press the **FUNCTION** key and release.
SET L0 is displayed momentarily, followed by X.XX, where X.XX should be the white patch ORTHO value from the Reflection Reference card.
4. If X.XX matches the white patch ORTHO value for your reflection reference, press the **ENTER** key. If X.XX does not match, hold down the **ZERO** key and press either the **FUNCTION** or the **ENTER** key. Decrease (**FUNCTION**) or increase (**ENTER**) the value until the correct number is displayed. When finished, release the keys and press **Enter**.
SET HI is displayed momentarily, followed by Y.YYH, where the Y.YY part of the value should be the black patch ORTHO value from the Reflection Reference card.
5. If Y.YY matches the black patch ORTHO value for your reflection reference, press the **ENTER** key. If Y.YY does not match, hold down the **ZERO** key and press either the **FUNCTION** or the **ENTER** key. Decrease (**FUNCTION**) or increase (**ENTER**) the value until the correct number is displayed. When finished, release the keys and press **Enter**.
6. When you see READ WHT displayed, center the circle on the base of the densitometer over the white patch (the one labeled "1") on the Reflection Reference. Push the head down and then release it to establish the white patch Optical Density.
If INVALID displays, repeat the measurement.
7. When you see READ BLK displayed, center the circle on the base of the densitometer over the white patch (the one labeled "3") on the Reflection Reference. Push the head down and then release it to establish the black patch Optical Density.
If INVALID displays, repeat the measurement.

Verify the calibration by measuring the black, gray, and white patches. If they agree within 0.02 OD to the reflection reference values on the card, density is accurately calibrated. If not, repeat this process until the measurements are accurate.

To find out how you can calibrate and set output appearances, see "Calibrating a printer using the Halftone Management System" on page 259.

Calibrating a printer using the Halftone Management System

The Halftone Management System lets you calibrate each of your printers to achieve a consistent tone curve for a set of generic halftone screens. The system also lets you define additional calibrations for specific paper types. When calibrated the dot gain for a fifty percent dot will be nominally zero percent for **Standard** appearance, fourteen percent for **Highlight Midtone** appearance, and thirty-four percent for **Dark** appearance.

To use this tool to calibrate your printers, do these procedures in sequence:

1. "Defining InfoPrint Manager servers to the Halftone Management System client"
2. "Defining custom patch sets"
3. "Calibrating a halftone" on page 260
4. "Measuring optical density with a densitometer" on page 263

Defining InfoPrint Manager servers to the Halftone Management System client

The first time you start the Halftone Management System client, you will see an empty window. You must connect to the InfoPrint AIX server to see a list of the printers that are available for calibration:

1. From the **Halftone Management System** (or **Main**) window, select the **Edit → Servers** option.
2. From the **Servers** window, select the **File → Add Server** option.
3. In the **Server Properties** window, fill in the **Server Name** field with the symbolic server name, and the **Hostname** field with either the explicit name of the server or the server's dotted decimal notation IP address.

For example, the **Server Name** field value could be `sage`, while the **Hostname** field value could be either `sage.penn.boulder.ibm.com` or `9.99.43.73`.

4. Return to the **Main** window and either use left mouse button to double-click on each printer or highlight the printer and press enter to display its output screens. The Main window displays all printers defined to the InfoPrint server to which you are connected, but only the IPDS printers contain screens that can be calibrated.

Defining custom patch sets

A patch set is a step wedge file that has patches with different shades of gray. One patch set has been defined (`patches11`). It has eleven uniformly-stepped grays.

To define additional patch sets, use this procedure:

1. From the **Halftone Management System** window, select the **Edit → Patch Sets** option.
2. From the **Patch Sets** window, click a patch set (such as `patches11`) and select the **Edit → Properties** option.
3. From the **Patch Set *name*** window (where *name* indicates the patch set highlighted in the previous step), use the left mouse button to select the patches that you would like to modify.

The screen shows 99 squares representing from 1-to-99 percent dot at one percent increments. Squares which are dark will be printed. To change a patch selection, point to the patch desired and left-click. Each click selects or deselects

a patch. 0 percent and 100 percent dot patches are always included in each patch set. The example displayed below will print 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, and 100 percent dot patches.

4. Once you have defined the patch set, select the **File → Save as** option and save your patch set with a unique name.

The shipped patch set patches11 cannot be modified. However, a user-created patch set can be modified through the **Save** option.

Calibrating a halftone

Once you have either selected an existing patch set or created your own customized patch set, you must print it out, use a densitometer to measure the density of each gray patch. Then you must enter the calibration values in the Halftone Calibration Management System to create a calibration curve for the printer.

Note: Make sure that you use the Halftone Management System to both add and delete patch files and Calibration files.

Use this procedure to accomplish these tasks:

1. If desired, define a custom patch set to print from the Halftone Management System window from the menu bar by selecting **EDIT → PATCH SETS**, then selecting the patch from the list and **ACTIONS → SELECT AS CURRENT, FILE → CLOSE**.
2. From the **Halftone Management System** window, select a printer and a halftone screen supported by that printer.
3. From the **Halftone Management System** window, select the **Actions → Print Patches** option.
4. If the actual destination you chose has a **logical-destination-assigned** attribute, the patch set will be sent to that logical printer. Otherwise, you will be prompted for a logical printer.
5. From the pop-up window, click **OK**.
6. Once you retrieve your output from the printer, use the densitometer to measure the patches. Because the Halftone Management System is designed to take multiple measurements of each patch and use the average, you could take three measurements of each patch.
7. Select the same actual destination (printer) and screen that you selected before you printed the patch set (in 2).
The printed patch set identifies the screen, patch set, and printer, along with a date/time stamp.
8. From the **Halftone Management System** window, select the **Actions → Calibrate** option.
9. From the **Enter calibration values** window (shown below), set **The number of entries to average** field (it defaults to 3) to the number of measurements you took for each patch.
10. If this is a custom calibration and you want it to replace the default calibration provided by InfoPrint Manager, allow it to retain the default value in the **Calibration name** field. To retain the original default, but have this custom calibration as a second option, type a name for the calibration in the **Calibration name** field.

11. To enter your densitometer readings, begin with the **0%** field. Enter your first 0% value and press **Enter**. The statistics of your values will be displayed under the columns **Average**, **Min**, and **Max**.

If you specified more than 1 in the number of entries to average field, the cursor will remain in the field for your next reading. Otherwise, it will move on to the next patch field. Continue until all your readings have been entered. The display below shows a sample customized Calibration named `first_run`.

Enter calibration values

Printer: ip2000
 Screen: ibm85lpi
 Patch set : patches11
 The number of readings per patch:
 Calibration name:

| % gray | Entry | Average | Min | Max | # entries | |
|--------|----------------------|---------|------|------|-----------|--------------------------------------|
| 0% | <input type="text"/> | 0.0700 | 0.07 | 0.07 | 3 | <input type="button" value="Clear"/> |
| 10% | <input type="text"/> | 0.1967 | 0.19 | 0.2 | 3 | <input type="button" value="Clear"/> |
| 20% | <input type="text"/> | 0.3100 | 0.31 | 0.31 | 3 | <input type="button" value="Clear"/> |
| 30% | <input type="text"/> | 0.4233 | 0.42 | 0.43 | 3 | <input type="button" value="Clear"/> |
| 40% | <input type="text"/> | 0.5367 | 0.53 | 0.54 | 3 | <input type="button" value="Clear"/> |
| 50% | <input type="text"/> | 0.6867 | 0.67 | 0.7 | 3 | <input type="button" value="Clear"/> |
| 60% | <input type="text"/> | 0.8000 | 0.79 | 0.81 | 3 | <input type="button" value="Clear"/> |
| 70% | <input type="text"/> | 0.9600 | 0.95 | 0.97 | 3 | <input type="button" value="Clear"/> |
| 80% | <input type="text"/> | 1.0800 | 1.06 | 1.09 | 3 | <input type="button" value="Clear"/> |
| 90% | <input type="text"/> | 1.3067 | 1.3 | 1.31 | 3 | <input type="button" value="Clear"/> |
| 100% | <input type="text"/> | 1.4400 | 1.43 | 1.45 | 3 | <input type="button" value="Clear"/> |

Figure 25. First_run calibration

- Once you have filled in your calibration values, press the **OK** button. Your calibration is saved in the `/usr/lpp/psf/config/custom` directory and ready for use.

Measuring optical density with a densitometer

This procedure describes how you can measure optical density using the XRITE 400B Densitometer. While you can use other densitometers, this procedure has been verified with this particular make and model. Make sure that the density readings are absolute, not paper reference.

1. Press the **FUNCTION** key until DEN appears. If DEN-R appears, press the **ZERO** key and try again.
2. Center the circle on the base of the densitometer over the area to be measured.
3. Push the head down and release it to measure the Optical Density (OD).
The density reading will appear as X.XXD.
4. Record the X.XX value as it is displayed.

Several measurements should be taken at different representative locations on each gray patch and averaged to obtain an accurate OD value. Alternately, you can enter individual measurements into the calibration value screen and have the averaging performed automatically.

Specifying a halftone for printing on the InfoPrint AIX server

You can use a particular halftone for printing a grayscale file through either “Printing from InfoPrint Submit Express” interface or the “Printing from the AIX command line.”

Note: The Halftone Management System does not need to be running when you print the job.

Printing from InfoPrint Submit Express

You can print using a particular halftone for printing a grayscale file from a job ticket (*name.jtk* file) in InfoPrint Submit Express. Begin by selecting a value in the **Halftone** field of the **Look** tab. Note that all halftones shipped with the product have the term ‘ibm’ prepended to their identifier. If you are accessing this interface for the first time, all of your previous default calibrations will have ‘ibm’ attached to the name.

InfoPrint Manager lets you determine output appearance on a job-by-job basis by setting a default halftone in a default document or job object.

Note: InfoPrint Submit Express is part of the InfoPrint Manager Print-on-Demand feature.

Printing from the AIX command line

You can submit a halftone calibration from the AIX command line by using some variation of the **pdpr** Command:

```
pdpr -p sip20-sage -x halftone=ibm1061pi:highlight-midtones grayscale.ps
```

where the **-x** value is the customized calibration file and *grayscale.ps* is the file to be printed.

Note: When submitting a **pdpr** command from the AIX command line, you can specify the **halftone** attribute. The actual halftone name for this example (*ibm1061pi:highlight-midtones*) can be found either by using the **InfoPrint Manager Administration Interface** to look up the halftones supported for the

actual destination, or enter this at the command line: `pdls -cp -r
halftones-supported ActualDestination name`.

Chapter 31. Submitting specialized print jobs

This chapter describes these specialized print job:

- “Submitting PSF printer input to a PCL or PPDS printer”
- “Printing PCL or PostScript to PSF destinations: specifying which paper bin to use” on page 267
- “Sending print jobs to InfoPrint Manager for Windows from an AIX system” on page 275
- “Printing from ERP applications” on page 277

Submitting PSF printer input to a PCL or PPDS printer

In addition to AFP printing, InfoPrint Manager allows you to submit PSF printer input data to PCL and PPDS printers as well.

When you use the Create Printer wizard in the InfoPrint Manager Administration GUI to create a printer object that will send jobs to a PCL or PPDS printer, you must specify the path for the command in the **Printer command** field. For example, by default the `lpr` command is located at `c:\winnt40\system32\lpr.exe`. Because InfoPrint Manager does not search the **PATH** environment variable for the command, you must either add that directory to the **PATH** for that system or specify the entire path of the command, as in this example:

```
c:\winnt40\system32\lpr -P printername -S servername
```

To specify a file name in the command in a location other than at the end of the command, you must include the text-string **-IPMF-** in the command string. The temporary file name used to store either the PCL or PPDS data generated by InfoPrint Manager is substituted into the command wherever the **-IPMF-** text-string is located.

Note: The dashes (-) on either side of the **-IPMF-** text-string are part of the syntax and cannot be omitted.

You can only specify one **-IPMF-** text-string in a print command, as in the example below:

```
e:\usrapp\copyit -IPMF- /b e:\tmp
```

where `copyit` represents a user-written application for moving either the PCL or PPDS file that InfoPrint Manager generated to the specified directory (in this case, `\tmp` on the `e` drive), and giving it a unique name.

Setting up PCL tray mappings

To map the input trays requested in the AFP data stream to the input trays on your PCL printer, follow this procedure:

1. Determine the AFP bin number and PCL bin number for each input tray. Table 30 on page 266 shows the default bin numbers associated with some standard names for input trays.

Note: You can use any tray names you wish, but these names are defined by the PCL data stream and are the most common names. For more information

about the limitations of trays and paper with a PSF other-driver or PSF command DSS see the **psf-tray-characteristics** attribute in the *InfoPrint Manager: Reference*.

Table 30. Default bin mappings

| Input tray name | AFP bin number | PCL bin number |
|-----------------|----------------|----------------|
| alternate | 3 | 5 |
| bottom | 2 | 4 |
| envelope | 65 | 6 |
| manual | 100 | 2 |
| top | 1 | 1 |

If these mappings are not appropriate for your printer, reverse the process described in “Determining bin mappings” on page 268. In this case, the AFP bin number is the bin number in the data stream and the PCL tray number is the bin number used by the printer. Note that AFP bin numbers must be unique, but different AFP bin numbers can map to the same PCL tray number.

2. Open the InfoPrint Manager Administration GUI.
3. Select the printer that you want to set up trays on.
4. From the **Media/Bins/Trays** tab of the Actual Destination Properties notebook, in the **Media ready** table, select **Add** to define a new tray or **Modify** to change an existing one. You can define up to 15 trays.
5. Complete these fields:

Input bin number

This field specifies the AFP bin number.

Media ready

This field shows the medium loaded in the input tray. The drop-down list lets you select from all media supported by the printer.

Input tray name

This field shows the name associated with the input tray. Standard names for PCL input trays are:

- alternate**
- envelope**
- lower**
- manual**
- upper**

Formerly, these were the only names allowed. You can now use any name you like, subject to these restrictions:

- Manual trays must have the string **manual** somewhere in the name, in any combination of upper and lowercase, for example, transparentMANUALa4. You can define multiple manual trays.
- Envelope trays must have the string **envelope** somewhere in the name, in any combination of upper and lowercase, for example, Number10Envelope. You can define multiple envelope trays.

Tray number

This field specifies the PCL bin number.

Duplex

This field specifies whether two-sided printing is possible from this input tray.

6. Click **OK**.

To make your changes take effect, you must now stop and restart PSF, the printer, or both. Follow the steps corresponding to your job submission method.

- If you use DPF to submit jobs:

1. On your *host* system, stop PSF.
2. In the InfoPrint Manager GUI, left-click the printer, then select **Printer → Stop**.

Note: If you don't see **Stop** on the Printer menu, use **Add/Remove Menu Items** to add it.

3. Open the Management Console and click the DPF Host Receivers item in the left pane.
4. Click the DPF Host Receiver that feeds this printer to select it.
5. Click **Actions → Obtain Printer Characteristics**.
6. Go back to the InfoPrint Manager GUI and start the printer again.
7. Restart the host PSF.

- If you use any other method to submit jobs:

1. In the InfoPrint Manager GUI, left-click the printer, then select **Printer → Stop**.

Note: If you don't see **Stop** on the Printer menu, use **Add/Remove Menu Items** to add it.

2. In the **Stop command** dialog, select **Shut down** and click **OK**.
3. Select **Printer → Enable** to restart the printer.

Printing PCL or PostScript to PSF destinations: specifying which paper bin to use

In general, when you submit a print job through a PCL or PostScript driver, you can use the printer options to specify which input paper bin you want the printer to use. For example, if you know that white 8.5 x 11 inch paper is always loaded in bin one and letterhead is always in bin two, you can select bin one when you want to print a draft and bin two when you're ready to print a real letter.

When you send PCL or PostScript print jobs to a PSF Destination in InfoPrint Manager, the data stream is transformed into Advanced Function Presentation (AFP) before it is printed. By default, most PCL jobs that are transformed use paper bin one, regardless of the bin you specify. Transformed PostScript jobs default to letter-sized paper if no other options are specified, and look for a bin that contains that size paper; they either print on paper from the first bin that contains the right size or fail because they don't find the right paper.

If you want the transform program to check for your bin selection and include it in the AFP data that is sent to the printer, you must specify mappings between the PCL and PostScript bins and the AFP bins. The transform will use your mappings to convert the bin number it finds in the PCL or PostScript to an AFP bin number. You can configure InfoPrint Manager so that you can specify up to 20 different

input paper bins. For information about how to figure out which PCL and PostScript bins map to which AFP bins, see “Determining bin mappings.”

After you have figured out the bin mappings, select the option below that most resembles your situation and follow the related procedure.

- If you only have one printer with multiple paper bins OR if you can use the same mappings for all of your printers, see “Editing configuration files” on page 274.
- If you have more than one printer with multiple paper bins AND you want to use different mappings for all of them, see “Creating a transform with bin mappings” on page 274.

You cannot specify bin mappings if you are printing booklets (with or without integrated covers) or side-by-side copies (multiple copies of the same page on one sheet of paper).

Determining bin mappings

PCL printing

When you submit a print job through a PCL print driver and select a paper bin to print from, the driver generates a bin number and puts it into the data stream. Unfortunately, different drivers generate different bin numbers for the same bin. For example, one driver might make “Tray 1” equal to bin 4 and “Auxiliary tray” equal to bin 2, while another driver makes “Tray 1” equal to bin 1 and “Auxiliary tray” equal to bin 8. To add more difficulty, the generated PCL bin numbers can range from 0 to 59. While most drivers use low numbers (0 through 10), keep in mind the other possibilities.

During the transformation from PCL to AFP, InfoPrint Manager takes the bin number that the driver generated and compares it to the bin mappings you set. The `pcl2afp` transform inserts the AFP bin number that you assigned and sends the job to the destination you requested. The printer prints the job on paper from the bin you chose. As a result, it is essential that all of the users who submit jobs to a given InfoPrint Manager printer use the same driver. If they do not, the mappings you set up will not work correctly for them.

The first challenge for you in setting up the mappings is determining what bin number the PCL driver places in the data stream. For various InfoPrint printers, the drivers actually generate the same bin numbers. If you are using the PCL5e driver for an IBM Network Printer 12, Network Printer 17, Network Printer 24, InfoPrint 20, InfoPrint 21, InfoPrint 32, or InfoPrint 40, the numbers listed in Table 31 are placed in the data stream.

Table 31. IBM PCL5e Bin numbers

| Tray (what you select in Device Settings) | PCL bin number (what the driver puts in data stream) |
|---|--|
| Automatically Select | 0 |
| Tray 1 | 1 |
| Manual feed paper | 2 |
| Manual feed envelope | 3 |
| Auxiliary tray | 4 |

Table 31. IBM PCL5e Bin numbers (continued)

| Tray (what you select in Device Settings) | PCL bin number (what the driver puts in data stream) |
|---|--|
| Tray 2 | 5 |
| Envelope feeder or Envelope tray | 6 |
| Tray 3 | 7 |
| Tray 4 | 8 |
| Tray 5 or 2000 sheet input tray | 9 |

If you are using a different driver, the documentation that came with your printer might provide these numbers; look for a section on the PCL driver. Alternatively, if you are able to capture the PCL data that is sent to a specific bin in your printer, you can look for the bin number in the data stream. In some cases, however, it might be just as easy to use trial and error to determine the correct mappings. Again, keep in mind that PCL bin numbers can range from 0 to 59.

The second challenge is in determining the AFP bin numbers that correspond to your printer. AFP bin numbers range from 1 to 255, and are not standard from printer to printer. Some printers have hard-coded bin numbers; each bin on the printer actually has a number written on it. In other cases, the AFP bin numbers are more difficult to discover. In fact, the numbering scheme for some printers changes completely when you add one of the optional paper bins. Still other printers allow you to change the bin numbers yourself. As a result, it is difficult to predict exactly what the AFP bin numbers for your printers are. However, there are some guidelines that you can use.

- Most AFP paper bins use numbers 1 through 10, with 1 being the biggest, topmost, or bottommost bin.
- Envelope feeders/bins start at number 65 and can go up to 69.
- The manual feed tray is usually number 100.

If you are printing to InfoPrint printers, the best place to find the default numbering schemes for each printer is in the *IPDS and SCS Technical Reference* and the *IPDS Handbook for printers that use the AFCCU™*, both of which are available from the InfoPrint Solutions Company web site at <http://www.infoprint.com>. (Under **Get support**, click **Product publications** => **IPDS Technical Reference** and find the *IPDS and SCS Technical Reference* and *IPDS Handbook for printers that use the AFCCU* in the list.

Important: If you find the AFP bin numbers for your printer in this documentation, be aware that the number is written in hexadecimal notation. You must convert the number to decimal before you put it in the mapping file. In addition, the numbers that are listed are the machine numbers, not the numbers the software requires (they are the *IPDS* bin numbers, not the *AFP* bin numbers). After you convert the number to decimal, add 1 to it to get the number that you should put in the mapping file.

For example, if you have a printer with three paper bins and a manual feed bin, you could do this:

1. On the system that your InfoPrint Manager server runs on, install the PCL driver that you plan to use. The easiest way to install the driver is by using the Windows **Add printer** wizard to create a printer that uses that driver.

2. Using the Management Console, create a Windows gateway printer that uses the driver you just installed and has a PSF printer as its target destination.
3. Click the Windows **Start** button and select **Settings** → **Printers** to open the **Printers** window.
4. Right-click the Windows gateway printer you just created and select **Properties** from the pop-up menu.
5. Click **Device Settings** to show the printer options that are available for this driver. For example, some drivers show a list of "paper trays" and allow you to select a paper size for each one.
6. Make sure that all of the paper trays you plan to use are activated and have the correct size paper selected.
7. Click **OK** to close the dialog and make the settings take effect.
8. Determine which method you will be using to map bins:
 - If you only have one printer with multiple paper bins OR if you can use the same mappings for all of your printers, see "Editing configuration files" on page 274.
 - If you have more than one printer with multiple paper bins AND you want to use different mappings for all of them, see "Creating a transform with bin mappings" on page 274.
9. Follow the appropriate procedure.

When you have to enter PCL and AFP bin numbers, start with the guidelines above and create some logical mappings, such as the ones shown in table Table 32 for an InfoPrint 20.

Table 32. Sample mapping table for an InfoPrint 20

| Tray selection | PCL bin number | AFP bin number |
|------------------|----------------|----------------|
| Tray 1 | 1 | 1 |
| Tray 2 | 5 | 2 |
| Tray 3 | 7 | 3 |
| Manual feed tray | 2 | 100 |
| Envelope tray 1 | 6 | 60 |
| Envelope tray 2 | 4 | 61 |

Complete the procedure.

10. Load each paper bin (including the manual feed bin) with a different kind, color, or specially marked paper.
11. Submit a test job to each bin and see which paper it prints on. Keep track of your results and use them to change the mappings to meet your configuration.
12. Once you have the mappings worked out correctly, tell your users this information:
 - How to create a connection to this Windows gateway printer from their workstations.
 - What options to set in the device settings.
 - What kind of paper is in each bin.
 - How to print to each bin.

PostScript printing

PostScript drivers use different methods to determine what paper bin to print a job on. Some drivers allow you to select which paper tray you want the paper to come

from. When you submit a job, the driver sends a number to the printer to ask for the corresponding tray. Other drivers allow you to select different paper options (such as size, color, or weight). When you submit a print job, these options are sent with the print job and are used to determine which paper bin to use (paper size is the only option that you have to set for this function to work).

When you configure InfoPrint Manager correctly, it will work with either type of driver. There are three steps involved in performing this configuration:

1. "Gathering paper tray information"
2. "Identifying paper trays to InfoPrint Manager" on page 272
3. "Testing tray mappings" on page 272

Gathering paper tray information: The first step in configuring InfoPrint Manager is to figure out:

- How many paper trays does your printer have?
- What is the AFP bin number for each tray?
Guidelines for figuring out the bin numbers are provided below.
- What kind of paper will you be loading into each tray?

At a minimum, you should know what size paper will go in each tray. You can also specify a color or weight of the paper.

Use this chart to record your data.

Table 33. Paper bin information

| AFP bin number (in decimal notation) | Paper tray on printer | Paper loaded |
|--------------------------------------|-----------------------|--------------|
| 100 | Manual feed tray | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

There is trial and error work involved in figuring out the correct bin numbers. AFP bin numbers range from 1 to 255, and are not standard from printer to printer. Some printers have hard-coded bin numbers; each bin on the printer actually has a number written on it. In other cases, the AFP bin numbers are more difficult to discover. In fact, the numbering scheme for some printers changes completely when you add one of the optional paper bins. Still other printers allow you to change the bin numbers yourself. As a result, it is nearly impossible to predict exactly what the AFP bin numbers for your printers are. However, there are some guidelines that you can use.

- Most AFP paper bins use numbers 1 through 10, with 1 being the biggest, topmost, or bottommost bin.
- Envelope feeders/bins start at number 65 and can go up to 69.
- The manual feed tray is usually number 100.

If you are printing to InfoPrint printers, the best place to find the default numbering schemes for each printer is in the *IPDS and SCS Technical Reference* and the *IPDS Handbook for printers that use the AFCCU*, both of which are available from the InfoPrint Solutions Company web site at <http://www.infoprint.com>. (Under **Get support**, click **Product publications** => **IPDS Technical Reference** and find the *IPDS and SCS Technical Reference* and *IPDS Handbook for printers that use the AFCCU* in the list.

Important: If you find the AFP bin numbers for your printer in this documentation, be aware that the number is written in hexadecimal notation. You must convert the number to decimal before you put it in the mapping file. In addition, the numbers that are listed are the machine numbers, not the numbers the software requires (they are the *IPDS* bin numbers, not the *AFP* bin numbers). After you convert the number to decimal, add 1 to it to get the number that you should put in the mapping file.

Identifying paper trays to InfoPrint Manager:

Once you have the chart filled in with your first try at mappings, you can move to the second step: identifying all of the bins to InfoPrint Manager.

By default, InfoPrint Manager assumes that all PostScript printers have only one paper tray. When you identify the trays, you let InfoPrint Manager know how many there really are. Then, when you submit a job, you can choose any one of them.

You identify the paper bins to InfoPrint Manager either in the configuration file or in the transform you create. In this step, you will determine the syntax that you will be able to use in either place. The general syntax of the identification statement is:

```
inputX=(size,type=xxx,weight=xxx,color=xxx),inputX=(size,
type=xxx,weight=xxx,color=xxx)
```

Where these conditions apply:

- Each `inputX` corresponds to a different paper tray. You should have as many `inputX` entries as you have paper trays. Separate them with commas, no spaces.
- The `X` in each `inputX` is replaced with the **AFP bin number** from Table 33 on page 271 for each tray.
- Size is the only required paper attribute. Replace the word `size` with the size of the paper that will be in the tray, such as **letter**, **legal**, **8.5x11i**, or **A4**.
- Other paper attributes can be specified or left out entirely.

All of these are valid identification statements:

```
input1=(letter),input2=(legal),input100=(letter)
input1=(8.5x11i,color=blue),input2=(8.5x11i,color=yellow),
input3=(11x17i),input100=(8.5x11i)
input1=(A4,color=white),input2=(A4,color=blue),input3=(A4,color=yellow),
input65=(C5),input100=(A4,type=letterhead)
```

Write out your identification statement before moving on to the next step.

Testing tray mappings:

Once you have your identification statement created, you can test your mappings to make sure they are correct. This procedure explains one way to verify the mappings.

1. On the system that your InfoPrint Manager server runs on, install the PostScript driver that corresponds to your printer. The easiest way to install the driver is by using the Windows **Add printer** wizard to create a printer that uses that driver. After you create the printer, you can delete it; the driver will still be installed.
2. Using the Management Console, create a Windows gateway printer that uses the driver you just installed and has a PSF printer as its target destination.
3. Click the Windows **Start** button and select **Settings** → **Printers** to open the **Printers** window.
4. Right-click the Windows gateway printer you just created and select **Properties** from the pop-up menu.
5. Click **Device Settings** to show the trays and options that are available.
6. If your driver lists the paper trays that are available, activate them and select paper sizes for each one. Set the options to match your identification statement.
7. Click **OK** to close the dialog and make the settings take effect.
8. Determine which method you will be using to map bins:
 - If you only have one printer with multiple paper bins OR if you can use the same mappings for all of your printers, see “Editing configuration files” on page 274.
 - If you have more than one printer with multiple paper bins AND you want to use different mappings for all of them, see “Creating a transform with bin mappings” on page 274.
9. Follow the appropriate procedure.

When you have to change the configuration file or enter the command that your transform will use, replace the `inputX=...` statement with your identification statement from “Identifying paper trays to InfoPrint Manager” on page 272, and complete the procedure. When you have to enter PostScript options and AFP bin numbers, select an input bin number and enter the options that you want to assign to that bin. For example, if you want AFP bin 1 (on the printer) to hold letter-sized paper, AFP bin 2 to hold legal paper, and the manual feed tray to hold 11x17 inch paper, the mapping portion of your command would read:

```
input1=(letter),input2=(legal),input100=(11x17i)
```
10. Load each paper bin (including the manual feed bin) with a different kind, color, or specially marked paper.
11. Test your settings by submitting print jobs to each bin of the Windows gateway printer and making sure that it prints on the correct paper. If a job does not print on the correct paper, adjust your AFP bin numbers and input numbers as necessary.
12. Tell your users this information.
 - How to create a connection to this Windows gateway printer from their workstations.
 - What options to set in the device settings.
 - What kind of paper is in each bin.
 - How to print to each bin.

Editing configuration files

There are five configuration files that come with the InfoPrint Manager PCL to AFP and PostScript to AFP transforms. For the PCL transform, they are: `pcl2afp.cfg` and `pcl2afpd.cfg`. For the PostScript transform they are: `ps2afp.cfg`, `ps2afpd.cfg` (used with InfoPrint 3000 and InfoPrint 4000 printers), and `3160d.cfg` (used with all other IPDS printers). You only need to edit one of these files per data stream, depending on the printer you send your jobs to and these considerations.

- Edit `pcl2afpd.cfg`, `ps2afpd.cfg`, or `3160d.cfg` if you want everyone to use the same mappings. This method is recommended.
- Edit `pcl2afp.cfg` or `ps2afp.cfg` if different people have to use different mappings.

To edit the appropriate file:

1. On the system that your InfoPrint Manager server is installed on, locate the file. It should be in the `<install path>\pcl2afp` or the `<install path>\ps2afp` directory.
2. Open the file in a text editor such as Notepad.
At the bottom of the file, you will see blocks of instructions and sample commands.
3. Modify the file according to the instructions in the file.
Choose one of the options and uncomment that line, then enter your mapping numbers. If you are using the `ps2afp` transform, replace the `inputX=...` portion of the `device_controls` line with your identification statement from “Identifying paper trays to InfoPrint Manager” on page 272.
4. Save the file.

Note: It is recommended that you save a copy of your changes in a directory outside of the InfoPrint Manager install path so that you have a copy in case you ever have to re-install or apply service to InfoPrint Manager.

5. Close the file.
6. Restart the computer to have the new settings take effect.
7. Tell your users what kind of paper is in each bin and how to print to each of them.

Creating a transform with bin mappings

You can use the InfoPrint Manager transforms to process print jobs with different options, including which paper bins to use. First, you create a transform using the InfoPrint Manager Administration GUI, specifying an input data stream and an output data stream. Then, you associate it with one or more printers. When you send a print job to that printer, your transform checks to see if the file is the data stream that needs to be transformed. If it does, the transform converts the file as you specified; if it is not, the transform passes the file to the logical destination. As a result, if you don't want to use the same bin mappings for all of your printers, you can create several different transforms, all with different mappings. Then, associate each transform with whichever printer or printers you want.

Note: If you will be sending both PCL and PostScript jobs to the same printer, you can create two transform objects (one that accepts PCL and one that accepts PostScript) and associate them both with that printer.

To create a transform that maps PCL/PostScript bins to AFP bins:

1. In the InfoPrint Manager Administration GUI, click **Server** and select **Transform → Create**.
2. In the **Create transform** dialog, fill in the fields:
 - **Name:** Type a name for the transform.
 - **Server:** Choose the correct InfoPrint Manager server.
 - **Format of output file:** Select **MODCA-P**.
 - **Description:** Type a description that will help you remember which printer uses this transform.
 - **Transform options:** The command line that will execute when the transform runs.

If this transform accepts PCL, type:

```
pcl2afp -o "%o" "%i" -device 'plex,inputX=(pcl_bin=Z),inputX=(pcl_bin=Z)'
```

Replacing the **Xs** with the number of the AFP bin (on the printer) and **Zs** with the number of the PCL bin. You can specify up to 20 mappings.

If this transform accepts PostScript, type:

```
ps2afp -o "%o" "%i" -device 'plex,inputX=(size,type=xxx,color=xxx,weight=nnn),inputX=(size,type=xxx,color=xxx,weight=nnn)'
```

Replace the `inputX=...` portion of the command with your identification statement from "Identifying paper trays to InfoPrint Manager" on page 272.
- Select **Transform and print**.
- **Document formats allowed:** The data stream that your transform accepts. Select **PCL** or **PostScript** and add it to the allowed values.
- Click **OK**.
3. Select the printer that you want to associate this transform with and open its properties notebook.
4. Click **Configuration**.
5. Find the **Transforms to use** field.
6. Select the transform you just created in the **Possible values** box and add it to the **Values** box.
7. Click **Apply**.
8. Click **Document**.
9. Find the **Formats allowed** section and look in the **Values** box. Make sure that **modca-p** and either **pcl** or **PostScript** are listed.
10. Click **OK**.
11. Tell your users what kind of paper is in each bin and how to print to each of them.

Sending print jobs to InfoPrint Manager for Windows from an AIX system

To send print jobs from an AIX system to InfoPrint Manager for Windows, you need to set up an appropriate Line Printer client (LPR) on the AIX system and an appropriate Line Printer Daemon (LPD) on the Windows system. To use the advanced printing options (such as `formdef` and `pagedefs`) that InfoPrint Manager provides, you must use `lprafp` on your AIX system and the InfoPrint Manager LPD on your Windows system.

lprafp is a version of LPR that lets you use `-o` options to specify advanced print options when you submit jobs to InfoPrint Manager. You can download an **lprafp** sample code package (including a compiled version of the code that can be used on AIX version 4.3.3 and later) from the InfoPrint Solutions Company Web site at <http://www.infoprint.com/>. InfoPrint Solutions Company does not provide support for the package.

The InfoPrint Manager LPD is installed and activated with your InfoPrint Manager for Windows server. It is the only LPD that properly processes the `-o` options that **lprafp** submits. If you use a different LPD (such as *TCP/IP Print Services*, the LPD that is shipped with the Windows operating system), the `-o` options that you send will be lost.

Note: The LPD supplied with the Windows operating system (TCP/IP Print Services) does support a `-o` option, but it is not the same. This `-o` option specifies the binary option.

If you use the InfoPrint Manager LPD, you will only be able to LPR print jobs to InfoPrint Manager destinations, not to Windows printers. If you use a different LPD, you will only be able to LPR to Windows printers. To submit a job to InfoPrint Manager, you will have to set up a Windows gateway printer.

If you cannot use **lprafp** and/or the InfoPrint Manager LPD, you can use the standard LPR and a different LPD to submit jobs from an AIX system to your InfoPrint Manager for Windows system. However, you will not be able to use advanced print options.

Important:

1. Do not use this procedure if you have InfoPrint Manager for AIX installed on your AIX system. If you have InfoPrint Manager for AIX installed, you should use the InfoPrint Manager AIX Client to submit print jobs from AIX systems to your InfoPrint Manager servers. In addition, you should consider setting up an interoperating environment so your InfoPrint Manager servers can work together.

For additional information about interoperability, refer to “Configuring for interoperability between an InfoPrint AIX server and an InfoPrint Windows server” on page 138.

2. When you enter the `lpr` command, you must specify the option that designates *binary* or *already-formatted* data. For example, on AIX you must use the `-l` (lowercase “L”) option on the `lpr`.

To submit jobs from an AIX system to your InfoPrint Manager for Windows system, you must complete these tasks:

- “Verify that the InfoPrint Manager LPD is running”
- “Install and configure **lprafp**” on page 277

Verify that the InfoPrint Manager LPD is running

1. On the system that your InfoPrint Manager server runs on, open the InfoPrint Manager Management Console.
2. Click **Edit** → **Service Configuration**.
3. In the **Service Configuration** dialog, find **Run InfoPrint Manager LPD service** check box.

- If the box is checked, the InfoPrint Manager LPD is already running. Click **Cancel** to dismiss the dialog.
 - If the box is not checked, click **Cancel** and continue with step 4.
4. In the Management Console, click **File** → **Stop Server**.
 5. After the InfoPrint Manager server has stopped, click **Edit** → **Service Configuration** again.
 6. Click **Run InfoPrint Manager LPD service** to select it.
 7. Click **OK**.
 8. Click **File** → **Start Server** to restart the InfoPrint Manager server.

Install and configure lprafp

The lprafp sample code package is available for free download at <http://www.ibm.com>.

Note: The compiled version of lprafp for AIX will only run on AIX 4.3.3 and later. If you have an earlier version, you must use a different LPR client and will not be able to use advanced printing options.

Printing from ERP applications

For information about the use of SAP R/3 with InfoPrint Manager, see the *InfoPrint Manager: SAP R/3 Configuration and Printing Tasks* publication, which can be found on the Internet in the manual and publication page for InfoPrint Manager for Windows or InfoPrint Manager for AIX at <http://www.infoprint.com>.

You can send PostScript or PCL output from your ERP software to InfoPrint Manager to be printed. If your ERP software is installed on a Windows system, you should submit the jobs through a Windows gateway printer. If your ERP software is installed on an AIX system and you do not have InfoPrint Manager for AIX installed, you should use the lprafp Line Printer Client (LPR) and the InfoPrint Manager Line Printer Daemon (LPD).

Submitting ERP print jobs from a Windows system

Defining the Windows gateway printer

Your ERP print jobs will be submitted to a Windows gateway printer that is associated with the appropriate PostScript or PCL driver for your printer. To define your Windows gateway printer:

1. Create or select an InfoPrint actual destination that will accept the data stream that you will be sending to the printer (PostScript, PCL, or AFP).

This actual destination can be almost any type of InfoPrint printer (Passthrough, BSD, IPP, PSF) that you can create using the InfoPrint Manager Administration GUI. If you don't want to use the default queue and logical destination, create them and associate the actual destination with them.
2. Install the appropriate PostScript or PCL printer driver on the system that your InfoPrint Manager server is located on.
 - If you will be sending PostScript data to an AFP printer, you can use the IBM Network Printer 17 driver, which you can download from the InfoPrint Solutions Company Web site.
 - Otherwise, you can install and use the driver that came with your printer.

To install the driver on your system:

- a. Insert the CD or disk containing the driver into the correct drive.
- b. Start the Windows **Add Printer** wizard and create a local printer. When you have to select a port, select FILE:.
- c. When the wizard gives you a list of manufacturers and printers, select either the IBM Network Printer 17 or the driver that came with your printer.
- d. Finish the wizard without printing a test page or making this printer the default.

Once you finish the wizard, you can delete this printer; the driver will still be installed.

3. Open the Management Console and create a Windows gateway printer.

In the **Target destination** field, select the destination that you created or chose in 1 on page 277. In the **Windows driver name** field, select the driver that you installed in 2 on page 277. Remember the **Share name** that you choose; you will need it later. Refer to the Management Console online help for additional information.

Adding the Windows gateway printer to the system you want to print from

Once the Windows gateway printer is created, you can add it to the desktop of the system that you want to print from. Then you will be able to submit your print jobs directly to it. Follow this procedure to add the Windows gateway printer to the desktop.

1. Use the **Add Printer** wizard to add the Windows gateway printer to your desktop as a network printer. When you are prompted for the name of the printer to connect to, find or enter the **Share name** of the Windows gateway printer you created. Finish the wizard.
2. Once the connection to the Windows gateway printer is created, you can print to it just as you would to any other printer.

Chapter 32. Configuring InfoPrint Manager for Windows to support the InfoPrint 5000 printer Models CS1 and CD1/2

The InfoPrint 5000 printer Models CS1 and CD1/2 are set up so that PDF and PostScript Level 3 jobs are submitted by dropping them into printer hot folders. The printer controller uses Microsoft Shared Folders as hot folders to receive the print jobs. From a print submission workstation or server, you can map the top-level hot folder directory to your local system and copy files to the individual hot folder to get the jobs to the printer. Hot folders can be configured with unique job attributes.

Note: All hot folders must be created from the InfoPrint 5000 printer operator panel.

The InfoPrint 5000 printer features a simple 2-up function that can be used for slit-merge finishing applications. Any other changes to document format and layout might require additional processing with impositioning software before a file is submitted for printing. InfoPrint Manager attributes are not passed to the InfoPrint 5000 printer. For each hot folder that is defined by the printer operator, a corresponding logical/actual destination pair needs to be defined on InfoPrint Manager. The InfoPrint 5000 printer requires a 1:1 relationship for logical to actual destinations.

To configure the InfoPrint Manager for Windows to support the InfoPrint 5000 printer Models CS1 and CD1/2, follow these steps:

1. (Optional) If you do not need to support the AFP or line data input data types, please ignore this step.
To support the AFP or line data input data types, install the **afp2pdf** PRPQ for InfoPrint Manager or **afp2pdf** PRPQ for InfoPrint Transform Manager.
See the related documents in PRPQ offerings for detailed instructions.
2. Map a network drive from the local machine to the printer's hot folder named **SV-110 HotFolder**. **SV-110 HotFolder** is the required name. Ask your Customer Support Specialist for the InfoPrint 5000 printer's userid and password. You can have up to 100 hot folders under **SV-110 HotFolder**. See "Mapping the Hot Folder for InfoPrint 5000" on page 281 for more information.
3. Run the scripts to create a new BSD DSS printer and the custom transforms to be assembled into the transforms list of the BSD DSS printer. Depending on your workflow, you might need to run the scripts many times: once to reference each PostScript shared folder on the InfoPrint 5000, and again to reference each PDF shared folder on the InfoPrint 5000.

You need a unique hot folder subdirectory under the **SV-110 HotFolder** for each type of PDF and PostScript that you send to the InfoPrint 5000, and you also need a unique actual destination/logical destination pair for each type of PDF and PostScript. Let's say you have two types of PDF and three types of PostScript, see Table 34 on page 280 for sample names.

Table 34. Suggested naming convention for InfoPrint 5000 hot folders

| Type of PDF or PostScript | Actual Destination name (limited to 8 characters) | Logical Destination name | Hot Folder subdirectory name |
|-------------------------------|---|--------------------------|------------------------------|
| PDF letter | 5K-PDF1 | 5k-pdf1-ld-letter | PDF letter |
| PDF tabloid | 5K-PDF2 | 5k-pdf2-ld-tabloid | PDF tabloid |
| PostScript letter size | 5K-PS1 | 5k-ps1-ld-letter | PS letter |
| PostScript tabloid size | 5K-PS2 | 5k-ps2-ld-tabloid | PS tabloid |
| PostScript ABC Statement size | 5K-PS3 | 5k-ps3-ld-abc | PS ABC Statement |

See “Running scripts” on page 281 for detailed instructions.

4. InfoPrint Manager for Windows uses a default user name called **LocalSystem** for its activities. **LocalSystem** does not have the ability to write to a network drive, even if the Administrator on the workstation can write to that same network drive:
 - a. You must add the user name and password provided to access shared network drives on the InfoPrint 5000 printer to the InfoPrint Manager for Windows server by using **Control Panel→Users and Passwords**. The user must be a member of the Administrator’s group. You must also set the password to never expire.
 - b. Give the user access to these Administrative Tool policies:
 - 1) Go to **Control Panel→Administrative Tools→Local Security Policy**. You see the **Local Security Settings** window.
 - 2) From the **Local Security Settings** window on the left pane, open the **Local Policies** folder and then open the **User Rights Assignment** folder, and then select these assignments on the right pane:
 - **Act as part of the operating system**
 - **Create permanent shared objects**
 - **Log on as a service**
 - c. Open the InfoPrint Manager for Windows Management Console. Stop the InfoPrint Manager for Windows server. Use **Edit→Service Account/Domain** and replace **LocalSystem** with the InfoPrint 5000 user name and password that you received from the Customer Support Specialist.
5. Restart the InfoPrint Manager for Windows server.
6. After a PDF or PostScript print job is copied to the appropriate InfoPrint 5000 hot folder, the print job is no longer available on InfoPrint Manager unless the **job-retain-until** or **job-retention-period** job attributes are specified for the job.

Notes:

1. Only the Customer Support Specialist can change the user name and the password from the InfoPrint 5000 printer control panel. Work with your Customer Support Specialist to have them change the user name and password.
2. If you use interoperating InfoPrint Manager for Windows servers in your environment, make sure that the hot folder share userid is the same as the domain account userid that was used for the interoperating systems.

Mapping the Hot Folder for InfoPrint 5000

You should map or mount the Hot Folder provided by the InfoPrint 5000 printer onto your local system.

To do this mapping in the Windows operating system, follow these steps:

1. On the desktop, right-click **My Computer** or **My Network Places**. Then a pop-up menu displays.
2. From the pop-up menu, select **Map Network Drive**. You see the **Map Network Drive** window.
3. On the **Map Network Drive** window:
 - a. In the **Drive** combination box, click the local drive letter that you want the remote folder to be mapped to.
 - b. In the **Folder** combination box, type the path to the remote folder (such as `\\IPC01\SV-110 Hotfolder` or the IP address) or press the **Browse** button to select the remote folder from the Local Area Network.
 - c. Click **Connect using a different user name**.
 - d. You see the **Connect As** window. Enter the supplied userid and password from your Customer Support Specialist.
4. Click **Finish**. Now you have successfully mapped the Hot Folder onto your local system.

Running scripts

When you need to enable the InfoPrint 5000 support, some scripts should be run on the InfoPrint Manager server, to create a new BSD DSS printer (together with a new logical destination and a new or existing queue), to create the custom transforms that allows the InfoPrint Manager product to convert the input data to the corresponding output data format, and to assemble the list of transform objects previously created into the BSD DSS printer. To run these scripts, you can execute a Windows command `run_customization_1.cmd`, with administrative rights both on the Windows system and on the InfoPrint Manager server.

The `run_customization_1.cmd` command syntax:

```
run_customization_1.cmd nameOfServer nameOfAD nameOfQueue nameOfLD nameOfSharedIP5000NetworkDrive
```

where:

nameOfServer

Specify the name of the InfoPrint Manager server where to create the destination.

nameOfAD

Specify the name of the new actual destination that will be created.

nameOfQueue

Specify the name of an existing queue or a new one that will be created, if there is no queue named *nameOfQueue*.

nameOfLD

Specify the name of the new logical destination that will be created.

nameOfSharedIP5000NetworkDrive

Specify the path to the Hot Folder provided by the InfoPrint 5000 printer.

For example:

```
run_customization_1.cmd ipmwin 5K-PS1 color-q 5k-ps1-1d-1edger "\\ipc01\SV-110 Hotfolder\PS Letter"
```

Note: After running the **run_customization_1.cmd** script, check the results that the command returns and make sure that a new actual destination and logical destination were created. You can specify an existing queue in the script's parameters, so this might be reflected in the results that the command returns. Specify the path to the Hot Folder provided by the InfoPrint 5000 printer.

Limitations of InfoPrint 5000 printer support

This support has these limitations:

1. The **afp2pdf** transform does not support n-up.
2. The **afp2pdf** transform supports black and white text, color text and GOCA.
3. The **afp2pdf** transform does not support CMR.
4. The number of copies is limited to 1.
5. Input data streams are limited to line-data, AFP, PDF, and PS data types.
6. There are limitations for output print fidelity of the **afp2pdf** transform.
7. The accounting information is available only when the **pdaccount** administrative command is used.
8. No accurate job completion status is available. Only the page count is provided as feedback.
9. Any attributes relevant to PS and PDF input files are not supported, because these files will be simply passed through.
10. InfoPrint Manager submission clients Submit Express and InfoPrint JobTICKETER are not supported.
11. The input AFP files together with the **formdef** are the only formatting controls of the input job. Other formatting controls such as output format (booklet, reverse order) are not supported.

Chapter 33. Configuring the InfoPrint 5000 Models AS1 and AD1/2 to print PDF and PostScript

Printing PDF and PostScript files on the InfoPrint 5000 printer Models AS1 and AD1/2 with hot folders from InfoPrint Manager for Windows

To print PDF and PostScript files on the InfoPrint 5000 printer Models AS1 and AD1/2 with InfoPrint Manager for Windows, you can use hot folders.

When you use hot folders, you must complete minor configuration tasks.

Running scripts before printing PDF and PostScript files

All hot folders must be created from the InfoPrint 5000 printer operator panel. The hot folders can have different job attributes, such as the actual destination to print the job (**actual-destination-requested** job/default job attribute) or the combination of start, end, or separator sheets to use with a job (**auxiliary-sheet-selection** job/default job attribute).

To enable InfoPrint 5000 hot folder support, run scripts on the InfoPrint Manager server to create a new BSD DSS printer (together with a new logical destination and a new or existing queue), to create the custom transforms that allows InfoPrint Manager to convert the input data to the corresponding output data format, and to assemble the list of transform objects previously created on the BSD DSS printer.

To configure the InfoPrint Manager server to enable hot folder support on the InfoPrint 5000 printer:

1. Log on to your InfoPrint Manager server.
 2. Locate the scripts provided by InfoPrint Manager: *install_path\bin*
 3. Type one of these commands:
 - For Model AS1, `run_customization_1.cmd nameOfServer nameOfAD nameOfQueue nameOfLD \\printerIPAddress\Simplex\yourhotfolder`
 - For Models AD1/2, `run_customization_1.cmd nameOfServer nameOfAD nameOfQueue nameOfLD \\printerIPAddress\Duplex\yourhotfolder`
- nameOfServer*
Specify the name of the InfoPrint Manager server on which to create the destination.
- nameOfAD*
Specify the name of the new actual destination that will be created.
- nameOfQueue*
Specify the name of the existing queue or a new queue.
- nameOfLD*
Specify the name of the new logical destination that will be created.
- PrinterIPAddress*
Specify the IP address for the InfoPrint 5000.
- Simplex or Duplex**
Specify the parent directory for your hot folder. With Model AS1, specify Simplex. With Models AD1/2, specify Duplex.
- yourhotfolder*
Specify the name of the hot folder created at the InfoPrint 5000 printer console.

4. Verify that a new actual destination and logical destination were created by checking the InfoPrint Manager Administration GUI.
5. Submit a PDF or PostScript test job to the InfoPrint 5000.

Example scripts

- For Model AS1:
`run_customization_1.cmd ipwin 5k-short color-q 5k-short-ld
\\9.16.72.105\Simplex\shortcolorjobs`
- For Models AD1/2:
`run_customization_1.cmd ipwin 5k-long color-q 5k-long-ld
\\9.27.83.207\Duplex\longcolorjobs`

Part 5. Operator and User Procedures

Chapter 34. Setting up finishing options for specific printers

This chapter describes finishing options for these printers:

- “Setting up finishing options for IPDS-only printers”
- “Setting up finishing options for PS/PCL printers” on page 294

Setting up finishing options for IPDS-only printers

Depending on the printer model, you can set up several finishing options. InfoPrint Manager can be set up to support many of these possibilities, including edge stitching (stapling one edge of the print job to create a booklet), saddle stitch (stapling in the middle of the page to create a folded booklet), and corner stapling. These sections describe how to set up finishing options for IPDS printers, including the InfoPrint 45, InfoPrint 60, and InfoPrint 2000.

Telling InfoPrint Manager what options the finisher supports

The first step in enabling the finishing options is to let InfoPrint Manager know what options the finisher supports. To set the appropriate values:

Note: If you will only be submitting print jobs that specify a form definition to this printer, you do not have to complete this procedure. You can proceed to “Setting up InfoPrint Manager and clients to use finishing options” on page 295.

1. Start the InfoPrint Manager Administration GUI.
2. Find or create the PSF printer (actual destination) that sends jobs to the printer you are setting up.
3. Right-click the printer and select **Properties** from the pop-up menu.
4. In the Printer Properties notebook, click **Job**.
5. Find the **Finishing options allowed** field.

Note: If you don't see the **Finishing options allowed** field, click **Show More**.

6. Select all of the finishing options that your finisher supports in the **Possible values** list and add them to the **Values** list.
7. Click **OK**.

Setting up InfoPrint Manager and clients to use finishing options

How you set up to use finishing options varies depending upon what kind of print jobs you create and how you submit them. There are several categories; find the one that most resembles your situation.

Using the `pdpr` command

When you submit print jobs from the command line with the `pdpr` command, you can use the `job-finishing` attribute on the `-x` flag to specify finishing options. For example:

```
pdpr -d printername -x"job-finishing=staple-top-left" printfilename
```

You can also use the `form-definition` attribute on the `-x` flag to specify finishing options. For example:

```
pdpr -d printername -x"form-definition=Flname" printfilename
```

For a list of allowed values, proper syntax, and usage guidelines for the **job-finishing** and **form-definition** attributes, see *InfoPrint Manager: Reference*.

Using a form definition

If you submit your print jobs using a form definition (either by specifying a certain one or by using a default form definition), you can identify the finishing options that you want to apply in the form definition. When you specify printing and finishing options this way, no InfoPrint finishing attributes are necessary to request the finishing options. The print job is sent to the printer and the options are read out of the formdef. If the finisher supports the options chosen, the job should print correctly without any more configuration on your part.

Note: InfoPrint Manager does not check the finishing options you specify in the formdef against the options you set in “Telling InfoPrint Manager what options the finisher supports” on page 294. As a result, if the finisher doesn’t support the options, the job will fail.

Using InfoPrint Submit Express

When you submit a job using InfoPrint Submit Express, you can select a variety of options, including finishing. Build your job ticket as you usually would, and specify the finishing options that you want to use in the **Finishing** field on the appropriate tab.

Using InfoPrint Select

The enhanced InfoPrint Select client lets you specify job-finishing attribute values or a form definition when submitting a job to the server. For more information about using the job-finishing attribute, see the *InfoPrint Manager: Reference*. For instructions on setting attribute values in Select, consult the help system.

Using the InfoPrint AFP driver: If you are interested in using the powerful features of AFP in a wide range of environments, you might want to install and use the InfoPrint AFP driver with InfoPrint Select. To install and set up the InfoPrint AFP driver, see “Setting up the AFP driver” in *InfoPrint Manager for Windows: Getting Started*. To specify the AFP driver for your printer, follow the directions in “Creating InfoPrint Select printers” in the *InfoPrint Manager for Windows: Getting Started*, and specify one of these drivers depending on your printer model:

1. For the InfoPrint 45 printer, specify the **InfoPrint AFP 4345** driver.
2. For the InfoPrint 60 printer, specify the **InfoPrint AFP 3160** driver.
3. For the InfoPrint 2000 printer, specify the **InfoPrint AFP 2710** driver.

Once installed, click **Printing Preferences** on Windows 2000 systems from the **Print** window, and then use the AFP driver to specify inline form definitions with finishing options, or make use of other AFP features.

PSF printer:

To use InfoPrint Select to submit print jobs with finishing options to a PSF printer, you must create a Select printer that uses the specific printer driver for your printer shown here. The driver is installed on your system when you install InfoPrint Select. Use the procedure that is described in the *InfoPrint Manager for Windows: Getting Started* for creating a Select printer, modifying it as described here.

1. Follow the procedure through creating a port and selecting an InfoPrint destination.
2. When the **Add Printer** wizard asks you to choose a manufacturer and a printer model, don't select anything, just click **Have Disk**.
3. In the **Install from Disk** dialog, click **Browse** and navigate to the directory that you installed InfoPrint Select in. The default directory is c:\Infoprint.

Note: Because this dialog assumes the the driver is actually on a floppy disk or CD-ROM, you might receive an error that the drive is not ready. In the error box, click **Cancel**. A Windows **Open** dialog should then open. Use that dialog to navigate to the correct directory.

4. Select the `Ibmprint.inf` file and click **Open**.
5. Select the appropriate driver based on your printer model and click **OK**.
 - For the InfoPrint 45 printer, specify the **InfoPrint AFP 4345** driver.
 - For the InfoPrint 60 printer, specify the **InfoPrint AFP 3160** driver.
 - For the InfoPrint 2000 printer, specify the **InfoPrint AFP 2710** driver.
6. In the **Install from Disk** dialog, click **Next**.
7. Complete the wizard as usual.

When you submit jobs to this printer, you can choose the finishing option you want to use.

Note: The **InfoPrint 60 with Finisher** driver only supports four finishing options: **top corner**, **bottom corner**, **2 edge stitch** (two staples in one side of the paper), and **3 edge stitch** (three staples on one side of the paper). To use other finishing options, you have to use a different submission method.

Using a Windows gateway printer or the IPP gateway

You cannot select finishing options when you submit a print job using any of these methods, therefore it is recommended that you choose a different submission method to specify finishing options.

If you cannot use a different submission method, the only way to submit print jobs through one of these methods and request finishing options is to use default jobs. A *default job* is a list of attributes that is applied to every job that a particular logical destination receives. You can use the InfoPrint Manager Administration GUI to modify the default job for the logical destination that InfoPrint Select sends jobs to so that it requests the appropriate finishing options.

If you use default jobs, you will need a different logical destination for each finishing option. Every job that you send to a particular logical destination will be finished the same way. For example, if you set the **Finishing options** attribute of the default job to **staple-top-left**, every job that is submitted to that printer will have a staple in the top left corner, even if the job is only one page long. In addition, a logical destination can only have one default job, and a default job can only have one finishing option set.

Using MVS Download

MVS Download is an optional feature of PSF for OS/390® that uses TCP/IP to automatically send data sets from the JES spool, without formatting them, directly to InfoPrint Manager for AIX or InfoPrint Manager for Windows. InfoPrint Manager receives the data sets into files, formats them, and sends them to the printer. When you submit a print job with MVS Download, do one of these:

- Specify a mapping from a JCL keyword to a finishing attribute in the Windows destination control file. The selected JCL parameter you specify in OS/390 maps to the InfoPrint Manager **pdpr** finishing attribute.
- Use the existing form definition JCL keyword to form definition attribute mapping. The JCL FORMDEF parameter you specify in OS/390 maps to the InfoPrint Manager **pdpr** form definition attribute.
- Specify a default form definition or finishing attribute so all jobs have the same finishing option.

Using InfoPrint Manager hot folders

An InfoPrint Manager hot folder is a directory that is associated with a logical destination. When you copy or move a file to the hot folder, InfoPrint Manager automatically submits the file to that logical destination. The default job and document finishing attributes that are set for the logical destination are applied to jobs submitted through the hot folder. You can also specify other finishing attributes or use different values for existing attributes. For instructions on using hot folders, see “Submitting jobs through InfoPrint Manager hot folders” on page 306.

Using InfoPrint Manager LPD and an LPR client

The InfoPrint Manager Line Printer Daemon (LPD) is a utility that lets you submit print jobs from other operating systems using a Line Printer (LPR) client. To submit print jobs with finishing to the InfoPrint Manager LPD, you must use an LPR client, such as **lprafp**, that lets you use `-o` options to specify advanced printing options (for example, form definitions and page definitions) when you submit jobs to InfoPrint Manager. You can either specify finishing attributes on the submission command or use a default job.

On a Windows server, the InfoPrint Manager LPD is the only LPD that properly processes the `-o` options that **lprafp** submits. If you use a different LPD (such as TCP/IP Print Services, the LPD supplied with the Windows operating system), the `-o` options that you send will be lost. You can download an **lprafp** sample code package from the InfoPrint Solutions Company Web site at <http://www.infoprint.com>. The package includes executable forms of the **lprafp** client for the Windows and AIX (Version 4.3.3 Build Level 9 and later) platforms. You can also compile this code to use it on other platforms. InfoPrint Solutions Company does not provide support for the package.

Selecting the correct finishing options

In InfoPrint Manager, the finishing options have very descriptive names so that it is easy to select the one you want for your job. However, the names of those options are based on print jobs that use the “portrait” orientation, and as a result are misleading for jobs that printed in the “landscape” orientation. In addition, some of the options are valid if the paper is fed through the printer long edge first (LEF) and not valid if the paper is fed short edge first (SEF), and vice versa. As a result, choosing the correct finishing option can be confusing. These tables can help you determine which option to select for the InfoPrint 45, InfoPrint 60, and InfoPrint 70, based on how you want your job to be finished.

Paper fed LEF

Table 35. Options to set for paper fed LEF on the InfoPrint 45

| Desired output | Select this value for "portrait" jobs | Select this value for "landscape" jobs |
|--|---------------------------------------|--|
| One staple in the upper left corner | staple top left | staple bottom left |
| One staple in the upper right corner | Not supported | staple top left |
| One staple in the bottom left corner | staple bottom left | Not supported |
| More than one staple on the left edge of the paper | edge stitch, OR edge stitch left | Not supported |
| More than one staple on the top edge of the paper | Not supported | edge stitch OR edge stitch left |

Table 36. Options to set for paper fed LEF on the InfoPrint 60

| Desired output | Select this value for "portrait" jobs | Select this value for "landscape" jobs |
|--|---------------------------------------|--|
| One staple in the upper left corner | staple top left | staple bottom left |
| One staple in the upper right corner | staple top right | staple top left |
| One staple in the bottom left corner | staple bottom left | staple bottom right |
| One staple in the bottom right corner | staple bottom right | staple top right |
| More than one staple on the left edge of the paper (uses the default number of staples that is set for the finisher) | edge stitch OR edge stitch left | Not supported |
| Two staples on the left edge of the paper | edge stitch 2 | Not supported |
| Three staples on the left edge of the paper | edge stitch 3 | Not supported |
| More than one staple on the top edge of the paper (uses the default number of staples that is set for the finisher) | Not supported | edge stitch OR edge stitch left |
| Two staples on the top edge of the paper | Not supported | edge stitch 2 |
| Three staples on the top edge of the paper | Not supported | edge stitch 3 |
| More than one staple on the right edge of the paper | edge stitch right | Not supported |
| More than one staple on the bottom edge of the paper | Not supported | edge stitch right |

Table 37. Options to set for paper fed LEF on the InfoPrint 2000

| Desired output | Select this value for "portrait" jobs | Select this value for "landscape" jobs |
|---|---|---|
| One staple in the upper left corner | staple top left | staple bottom left |
| One staple in the upper right corner | staple top right | staple top left |
| One staple in the bottom left corner | staple bottom left | staple bottom right ¹ |
| One staple in the bottom right corner | staple bottom right ¹ | staple top right |
| Two staples on the left edge of the paper | edge stitch, edge stitch left, OR edge stitch 2 | Not supported |
| Two staples on the top edge of the paper | Not supported | edge stitch, edge stitch left, OR edge stitch 2 |
| Two staples on the right edge of the paper | edge stitch right | Not supported |
| Two staples on the bottom edge of the paper | Not supported | edge stitch right |

¹ Some printers support this option via 180-degree image rotation, some do not. See printer documentation for more details.

Note: For the InfoPrint 2000, paper must be pulled from the paper tray long-edge-first (LEF) for finishing options to be applied. Because ledger and A3 paper are both pulled from the paper tray short edge first (SEF), the InfoPrint 2000 does not support finishing options for those paper sizes.

Paper fed SEF

Table 38. Options to set for paper fed SEF on the InfoPrint 45

| Desired output | Select this value for "portrait" jobs | Select this value for "landscape" jobs |
|---|---------------------------------------|--|
| One staple in the upper left corner | staple top left | Not supported |
| One staple in the upper right corner | staple top right | staple top left |
| One staple in the bottom right corner | Not supported | staple top right |
| More than one staple on the right edge of the paper | Not supported | edge stitch OR edge stitch top |
| More than one staple on the top edge of the paper | edge stitch OR edge stitch top | Not supported |

Table 39. Options to set for paper fed SEF on the InfoPrint 60

| Desired output | Select this value for "portrait" jobs | Select this value for "landscape" jobs |
|-------------------------------------|---------------------------------------|--|
| One staple in the upper left corner | staple top left | staple bottom left |

Table 39. Options to set for paper fed SEF on the InfoPrint 60 (continued)

| Desired output | Select this value for "portrait" jobs | Select this value for "landscape" jobs |
|---|---------------------------------------|--|
| One staple in the upper right corner | staple top right | staple top left |
| One staple in the bottom left corner | staple bottom left | staple bottom right |
| One staple in the bottom right corner | staple bottom right | staple top right |
| More than one staple on the top edge of the paper (uses the default number of staples that is set for the finisher) | edge stitch OR edge stitch top | Not supported |
| Two staples on the top edge of the paper | edge stitch 2 | Not supported |
| Three staples on the top edge of the paper | edge stitch 3 | Not supported |
| More than one staple on the right edge of the paper (uses the default number of staples that is set for the finisher) | Not supported | edge stitch OR edge stitch top |
| Two staples on the right edge of the paper | Not supported | edge stitch 2 |
| Three staples on the right edge of the paper | Not supported | edge stitch 3 |
| More than one staple on the left edge of the paper | Not supported | edge stitch bottom |
| More than one staple on the bottom edge of the paper | edge stitch bottom | Not supported |
| Default number of staples in the center of the sheet | saddle stitch | saddle stitch |

Staple positions for InfoPrint 2060ES, InfoPrint 2075ES, InfoPrint 2090ES, InfoPrint 2190, InfoPrint 2210, and InfoPrint 2235

Table 40. Staple positions for InfoPrint 2060ES, InfoPrint 2075ES, and InfoPrint 2090ES mapped to InfoPrint Manager values

| InfoPrint Manager value | Staple Position | |
|-------------------------|-----------------|---------------|
| | Portrait | Landscape |
| staple-top-left | top left | top right |
| staple-bottom-left | bottom left | top left |
| staple-top-right | not supported | not supported |
| staple-bottom-right | not supported | not supported |
| edge-stitch | left edge | top edge |
| edge-stitch-2 | not supported | not supported |
| edge-stitch-3 | not supported | not supported |
| edge-stitch-left | left edge | top edge |

Table 40. Staple positions for InfoPrint 2060ES, InfoPrint 2075ES, and InfoPrint 2090ES mapped to InfoPrint Manager values (continued)

| | | |
|--------------------|---------------|---------------|
| edge-stitch-right | not supported | not supported |
| edge-stitch-top | not supported | not supported |
| edge-stitch-bottom | not supported | not supported |
| saddle-stitch | not supported | center |

Note: The InfoPrint Manager value **saddle-stitch** means *staple down the center*. With the InfoPrint 2060ES, InfoPrint 2075ES, and InfoPrint 2090ES, printers, **saddle-stitch** is only supported for sheets in the landscape orientation, and if this is specified along with bin 3, the sheets are sent to the BookletMaker.

Staple positions for InfoPrint 2105ES

Table 41. Staple positions for InfoPrint 2105ES mapped to InfoPrint Manager values

| InfoPrint Manager value | Staple Position | |
|-------------------------|-----------------|---------------|
| | Portrait | Landscape |
| staple-top-left | top left | top right |
| staple-bottom-left | bottom left | top left |
| staple-top-right | not supported | not supported |
| staple-bottom-right | not supported | not supported |
| edge-stitch | left edge | top edge |
| edge-stitch-2 | not supported | not supported |
| edge-stitch-3 | not supported | not supported |
| edge-stitch-left | left edge | top edge |
| edge-stitch-right | not supported | not supported |
| edge-stitch-top | not supported | not supported |
| edge-stitch-bottom | not supported | not supported |

Setting up finishing options for PS/PCL printers

Depending on the printer model, you can set up several finishing options. InfoPrint Manager can be set up to support many of these possibilities, including edge stitching (stapling one edge of the print job to create a booklet), saddle stitch (stapling in the middle of the page to create a folded booklet), and corner stapling. These sections describe how to set up finishing options for printers that can be sent PostScript and PCL, including the InfoPrint 70, InfoPrint 2085, and InfoPrint 2105.

Telling InfoPrint Manager what options the finisher supports

The first step in enabling the finishing options is to let InfoPrint Manager know what options the finisher supports. To set the appropriate values:

Notes:

1. For the InfoPrint 70, InfoPrint 2060ES, InfoPrint 2075ES, InfoPrint 2085, InfoPrint 2090ES, InfoPrint 2105, and InfoPrint 2105ES, the PSF DSS will set

default values for the job-finishing-supported attribute, so you do not need to do this setup process for the actual destination. These are the default settings:

InfoPrint 70

staple-top-left, staple-bottom-left, staple-top-right, edge-stitch

InfoPrint 2085, InfoPrint 2105

staple-top-left, staple-bottom-left, staple-top-right, edge-stitch, edge-stitch-left

InfoPrint 2060ES, InfoPrint 2075ES, and InfoPrint 2090ES

staple-top-left, staple-bottom-left, edge-stitch, edge-stitch-left, saddle-stitch

InfoPrint 2105ES

staple-top-left, staple-bottom-left, edge-stitch, edge-stitch-left

2. If you will be submitting only print jobs that specify a form definition to this printer or if, you do not have to complete this procedure. You can proceed to "Setting up InfoPrint Manager and clients to use finishing options."
 1. Start the InfoPrint Manager Administration GUI.
 2. Find or create the PSF printer (actual destination) that sends jobs to the printer you are setting up.
 3. Right-click the printer and select **Properties** from the pop-up menu.
 4. In the Printer Properties notebook, click **Job**.
 5. Find the **Finishing options allowed** field.

Note: If you don't see the **Finishing options allowed** field, click **Show More**.

6. Select all of the finishing options that your finisher supports in the **Possible values** list and add them to the **Values** list.
7. Click **OK**.

Setting up InfoPrint Manager and clients to use finishing options

How you set up to use finishing options varies depending upon what kind of print jobs you create and how you submit them. There are several categories; find the one that most resembles your situation.

Using the pdpr command

When you submit print jobs from the command line with the **pdpr** command, you can use the **job-finishing** attribute on the **-x** flag to specify finishing options. For example:

```
pdpr -d printername -x"job-finishing=staple-top-left" printfilename
```

You can also use the **form-definition** attribute on the **-x** flag to specify finishing options. For example:

```
pdpr -d printername -x"form-definition=F1name" printfilename
```

For a list of allowed values, proper syntax, and usage guidelines for the **job-finishing** and **form-definition** attributes, see *InfoPrint Manager: Reference*.

Using a form definition

If you submit your print jobs using a form definition (either by specifying a certain one or by using a default form definition), you can identify the finishing options that you want to apply in the form definition. When you specify printing and finishing options this way, no InfoPrint finishing attributes are necessary to request

the finishing options. The print job is sent to the printer and the options are read out of the formdef. If the finisher supports the options chosen, the job should print correctly without any more configuration on your part.

Note: InfoPrint Manager does not check the finishing options you specify in the formdef against the options you set in “Telling InfoPrint Manager what options the finisher supports” on page 294. As a result, if the finisher doesn’t support the options, the job will fail.

Using InfoPrint Submit Express

When you submit a job using InfoPrint Submit Express, you can select a variety of options, including finishing. Build your job ticket as you usually would, and specify the finishing options that you want to use in the **Finishing** field on the appropriate tab.

Using InfoPrint Select

The InfoPrint Select client lets you specify job-finishing attribute values or a form definition when submitting a job to the server. For more information about using the job-finishing attribute, see the *InfoPrint Manager: Reference*. For instructions on setting attribute values in Select, consult the help system provided with InfoPrint Select.

The automatic data stream transforms that PSF printers use do not support finishing (stapling), so in general, to use InfoPrint Select to submit PCL or PostScript jobs to a PSF printer (destination), you cannot specify finishing options when you submit a job, even if the print driver you use supports those options. However, there are other submission methods that will let you submit jobs with finishing options using Select.

Using the InfoPrint AFP driver:

If you are interested in using the powerful features of AFP in a wide range of environments, you might want to install and use the InfoPrint AFP driver with InfoPrint Select. To install and set up the InfoPrint AFP driver, see “Setting up the AFP driver” in *InfoPrint Manager for Windows: Getting Started*. To specify the AFP driver for your printer, follow the directions in “Creating InfoPrint Select printers” in *InfoPrint Manager for Windows: Getting Started* and specify one of these printer drivers depending on your printer model:

1. For the InfoPrint 70 printer, specify the **InfoPrint AFP 2770** driver.
2. For the InfoPrint 2085 printer, specify the **InfoPrint AFP 2785** driver.
3. For the InfoPrint 2105 printer, specify the **InfoPrint AFP 2705** driver.

Once installed, you can click either **Printing Preferences** on Windows 2000 systems and then use the AFP driver to specify inline form definitions with finishing options, or make use of other AFP features.

Using a PSF other-driver printer: You can use the **document-formats-ripped-at-destination** actual destination attribute to prevent the automatic data stream transform from occurring. Refer to the *InfoPrint Manager: Reference* for details.

Using a Passthrough printer: A Passthrough printer allows InfoPrint Manager for Windows to bridge to the Windows print-spooling subsystem, and it does not transform the data stream. This type of destination uses fewer processing resources but provides less functions.

Any other destination type: To use InfoPrint Select to submit print jobs to a different destination type (such as a BSD or IPP printer), the only way to request finishing options on PCL and PostScript jobs is to use default jobs. A *default job* is a list of attributes that is applied to every job that a particular logical destination receives. You can use the InfoPrint Manager Administration GUI to modify the default job for the logical destination that InfoPrint Select sends jobs to so that it requests the appropriate finishing options.

If you use default jobs, you will need a different logical destination for each finishing option. Every job that you send to a particular logical destination will be finished the same way. For example, if you set the **Finishing options** attribute of the default job to **staple-top-left**, every job that is submitted to that printer will have a staple in the top left corner. In addition, a logical destination can only have one default job, and a default job can only have one finishing option set.

Using a Windows gateway printer or the IPP gateway

You cannot select finishing options when you submit a print job using any of these methods, therefore it is recommended that you choose a different submission method to specify finishing options.

If you cannot use a different submission method, the only way to submit print jobs through one of these methods and request finishing options is to use default jobs. A *default job* is a list of attributes that is applied to every job that a particular logical destination receives. You can use the InfoPrint Manager Administration GUI to modify the default job for the logical destination so that it requests the appropriate finishing options.

If you use default jobs, you will need a different logical destination for each finishing option. Every job that you send to a particular logical destination will be finished the same way. For example, if you set the **Finishing options** attribute of the default job to **staple-top-left**, every job that is submitted to that printer will have a staple in the top left corner. In addition, a logical destination can only have one default job, and a default job can only have one finishing option set.

Using MVS Download

MVS Download is an optional feature of PSF for OS/390 that uses TCP/IP to automatically send data sets from the JES spool, without formatting them, directly to InfoPrint Manager for AIX or InfoPrint Manager for Windows. InfoPrint Manager receives the data sets into files, formats them, and sends them to the printer. When you submit a print job with MVS Download, do one of these:

- Specify a mapping from a JCL keyword to a finishing attribute in the Windows destination control file. The selected JCL parameter you specify in OS/390 maps to the InfoPrint Manager **pdpr** finishing attribute.
- Use the existing form definition JCL keyword to form definition attribute mapping. The JCL FORMDEF parameter you specify in OS/390 maps to the InfoPrint Manager **pdpr** form definition attribute.
- Specify a default form definition or finishing attribute so all jobs have the same finishing option.

Using InfoPrint Manager hot folders

An InfoPrint Manager hot folder is a directory that is associated with a logical destination. When you copy or move a file to the hot folder, InfoPrint Manager automatically submits the file to that logical destination. The default job and document finishing attributes that are set for the logical destination are applied to jobs submitted through the hot folder. You can also specify other finishing

attributes or use different values for existing attributes. For instructions on using hot folders refer to "Submitting jobs through InfoPrint Manager hot folders" on page 306.

Using InfoPrint Manager LPD and an LPR client

The InfoPrint Manager Line Printer Daemon (LPD) is a utility that lets you submit print jobs from other operating systems using a Line Printer (LPR) client. To submit print jobs with finishing to the InfoPrint Manager LPD, you must use an LPR client, such as **lprafp**, that lets you use `-o` options to specify advanced printing options (for example, form definitions and page definitions) when you submit jobs to InfoPrint Manager. You can either specify finishing attributes on the submission command or use a default job.

On a Windows server, the InfoPrint Manager LPD is the only LPD that properly processes the `-o` options that **lprafp** submits. If you use a different LPD (such as TCP/IP Print Services, the LPD supplied with the Windows operating system), the `-o` options that you send will be lost. You can download an **lprafp** sample code package from the InfoPrint Solutions Company Web site at <http://www.infoprint.com>. The package includes executable forms of the **lprafp** client for the Windows and AIX (Version 4.3.3 Build Level 9 and later) platforms. You can also compile this code to use it on other platforms. InfoPrint Solutions Company does not provide support for the package.

Selecting the correct finishing options

In InfoPrint Manager, the finishing options have very descriptive names so that it is easy to choose the one you want for your job. However, the names of those options are based on print jobs that use the "portrait" orientation, and as a result are misleading for jobs that printed in the "landscape" orientation. In addition, some of the options are valid if the paper is fed through the printer long edge first (LEF) and not valid if the paper is fed short edge first (SEF), and vice versa. As a result, choosing the correct finishing option can be confusing. These tables can help you determine which option to choose based on how you want your job to be finished.

Paper fed LEF

Table 42. Options to set for paper fed LEF for the InfoPrint 70

| Desired output | Select this value for "portrait" jobs | Select this value for "landscape" jobs |
|--|---------------------------------------|--|
| One staple in the upper left corner | staple top left | staple bottom left |
| One staple in the upper right corner | Not supported | staple top left |
| One staple in the bottom left corner | staple bottom left | Not supported |
| More than one staple on the left edge of the paper | edge stitch, OR edge stitch left | Not supported |
| More than one staple on the top edge of the paper | Not supported | edge stitch OR edge stitch left |

Paper fed SEF

Table 43. Options to set for paper fed SEF for the InfoPrint 70

| Desired output | Select this value for "portrait" jobs | Select this value for "landscape" jobs |
|-------------------------------------|---------------------------------------|--|
| One staple in the upper left corner | staple top left | Not supported |

Table 43. Options to set for paper fed SEF for the InfoPrint 70 (continued)

| Desired output | Select this value for "portrait" jobs | Select this value for "landscape" jobs |
|---|---------------------------------------|--|
| One staple in the upper right corner | staple top right | staple top left |
| One staple in the bottom right corner | Not supported | staple top right |
| More than one staple on the right edge of the paper | Not supported | edge stitch OR edge stitch top |
| More than one staple on the top edge of the paper | edge stitch OR edge stitch top | Not supported |

Staple positions for InfoPrint 2085 and InfoPrint 2105

Table 44. Staple positions for InfoPrint 2085 and InfoPrint 2105 mapped to InfoPrint Manager values

| InfoPrint Manager value | Staple Position | |
|-------------------------|-----------------|---------------|
| | Portrait | Landscape |
| staple-top-left | top left | top right |
| staple-bottom-left | bottom left | top left |
| staple-top-right | not supported | not supported |
| staple-bottom-right | not supported | not supported |
| edge-stitch | left edge | top edge |
| edge-stitch-2 | not supported | not supported |
| edge-stitch-3 | not supported | not supported |
| edge-stitch-left | left edge | top edge |
| edge-stitch-right | not supported | not supported |
| edge-stitch-top | not supported | not supported |
| edge-stitch-bottom | not supported | not supported |
| saddle-stitch | not supported | not supported |

Staple positions for InfoPrint 2060ES, InfoPrint 2075ES, and InfoPrint 2090ES

Table 45. Staple positions for InfoPrint 2060ES, InfoPrint 2075ES, and InfoPrint 2090ES mapped to InfoPrint Manager values

| InfoPrint Manager value | Staple Position | |
|-------------------------|-----------------|---------------|
| | Portrait | Landscape |
| staple-top-left | top left | top right |
| staple-bottom-left | bottom left | top left |
| staple-top-right | not supported | not supported |
| staple-bottom-right | not supported | not supported |
| edge-stitch | left edge | top edge |
| edge-stitch-2 | not supported | not supported |
| edge-stitch-3 | not supported | not supported |
| edge-stitch-left | left edge | top edge |
| edge-stitch-right | not supported | not supported |

Table 45. Staple positions for InfoPrint 2060ES, InfoPrint 2075ES, and InfoPrint 2090ES mapped to InfoPrint Manager values (continued)

| | | |
|---------------------------|---------------|---------------|
| edge-stitch-top | not supported | not supported |
| edge-stitch-bottom | not supported | not supported |
| saddle-stitch | not supported | center |

Note: The InfoPrint Manager value **saddle-stitch** means *staple down the center*. With the InfoPrint 2060ES, InfoPrint 2075ES, and InfoPrint 2090ES, printers, **saddle-stitch** is only supported for sheets in the landscape orientation, and if this is specified along with bin 3, the sheets are sent to the BookletMaker.

Staple positions for InfoPrint 2105ES

Table 46. Staple positions for InfoPrint 2105ES mapped to InfoPrint Manager values

| InfoPrint Manager value | Staple Position | |
|----------------------------|-----------------|---------------|
| | Portrait | Landscape |
| staple-top-left | top left | top right |
| staple-bottom-left | bottom left | top left |
| staple-top-right | not supported | not supported |
| staple-bottom-right | not supported | not supported |
| edge-stitch | left edge | top edge |
| edge-stitch-2 | not supported | not supported |
| edge-stitch-3 | not supported | not supported |
| edge-stitch-left | left edge | top edge |
| edge-stitch-right | not supported | not supported |
| edge-stitch-top | not supported | not supported |
| edge-stitch-bottom | not supported | not supported |
| saddle-stitch | not supported | not supported |

Chapter 35. Setting up high speed printers for spacing

In InfoPrint Manager, moving from page to page in a job is called *spacing*:

- *Forward spacing* is moving to a point later in the job (such as skipping from page 10 to page 15).
- *Backspacing* is moving to a point earlier in the job (such as backing up from page 40 to page 20).

For spacing to work effectively on the InfoPrint 2000 for AFP printing, InfoPrint 3000, InfoPrint 4000, and InfoPrint 4100, you must first enable the printer to work with the Simple Network Management Protocol (SNMP) and allow SNMP to configure the printer. These settings allow you to use the InfoPrint Manager GUI to stop a printer very quickly (in ten seconds or less) when you need to, instead of having to wait for all of the pages of a job that have been buffered to print.

Enabling SNMP on an InfoPrint 2000 for AFP printing

1. On the display/touch screen on the touch screen/printer console, open the **Printer definition** pull-down menu.
2. Select **Remote Access**.
3. On the **SNMP** tab:
 - Select the **Enable SNMP Agent** and **Allow SNMP to configure the printer** check boxes.
 - In the **Communities** list, touch the name of the community you will be using to access the printer and verify the settings. Make sure that the community has **Write** access to the printer.
4. Touch **OK** to close the window.
5. On the main screen of the console, make sure that the attachment type you will be using is enabled.
6. If you changed the **Enable SNMP Agent** or the **Allow SNMP to configure the printer** setting, shutdown and restart the printer to make the changes take effect.
7. Disable the printer and enable it again to refresh the printer configuration information in the server.
 - a. Start the InfoPrint Manager Administration GUI.
 - b. In the GUI, find the InfoPrint Manager printer (actual destination) that corresponds to this printer and select it.
 - c. Use the GUI to disable the printer.
 - d. Use the GUI to enable the printer again.

Enabling SNMP on an InfoPrint 3000 or an InfoPrint 4000 printer that uses the operator console

The Operator console is the standard console for the InfoPrint 3000 and the InfoPrint 4000.

1. On the display/touch screen on the Operator console, open the **Configure** pull-down menu.
2. Select **Remote Access**.

3. Under **Select a Remote Access**, select **SNMP**.
4. Under **Enabled**, select **Yes**.
5. Under **Allow to Configure**, select **Yes**.
6. Touch **OK** to close the window.
7. You will be prompted to restart the printer so that these settings can take effect. Restart the printer, and wait for it to power back up before you continue.
8. Disable the printer and enable it again to refresh the printer configuration information in the server.
 - a. Start the InfoPrint Manager Administration GUI.
 - b. In the GUI, find the InfoPrint Manager printer (actual destination) that corresponds to this printer and select it.
 - c. Use the GUI to disable the printer.
 - d. Use the GUI to enable the printer again.

Enabling SNMP on a printer that uses the Enhanced Operator Console

The Enhanced Operator Console is the standard console for the InfoPrint 4100 and is available as an upgrade for the InfoPrint 4000.

1. On the Enhanced Operator Console, touch **Printer definition** at the top of the screen.
2. On the left side of the screen, touch **Remote Access**.
3. In the **Communities** list, select the name of the community you will be using to access the printer and verify the settings. Make sure that the community has **Write** access to the printer.
4. Select the **SNMP Agent Enabled** and **Allow SNMP to Configure Printer** checkboxes, so they both say **Yes**.
5. Touch **OK** to save the settings.
6. You might be prompted to restart the printer so that these settings can take effect. Restart the printer, and wait for it to power back up before you continue.
7. Disable the printer and enable it again to refresh the printer configuration information in the server.
 - a. Start the InfoPrint Manager Administration GUI.
 - b. In the GUI, find the InfoPrint Manager printer (actual destination) that corresponds to this printer and select it.
 - c. Use the GUI to disable the printer.
 - d. Use the GUI to enable the printer again.

Chapter 36. General Operator and User Procedures

This chapter describes these procedures:

- “Turning duplexing on and off for the InfoPrint 45 and InfoPrint 70”
- “Deleting orphan files and resubmitting jobs to MVS Download” on page 304
- “Using a Windows gateway printer” on page 305
- “Adding an Internet Printing Protocol (IPP) gateway printer to your desktop” on page 306
- “Submitting jobs through InfoPrint Manager hot folders” on page 306
- “Submitting print jobs through the InfoPrint Manager LPD” on page 308
- “Checking job status” on page 310
- “Interrupting and restarting a job that is currently printing on an InfoPrint 4000/4100” on page 310
- “Stopping, restarting, or pausing a job that is currently printing” on page 311
- “Pausing a job that’s printing” on page 314
- “Moving backward or forward in a job that is currently printing” on page 316
- “Stopping a printer to perform scheduled maintenance” on page 317
- “Fixing a printer problem and starting to print again” on page 318

Turning duplexing on and off for the InfoPrint 45 and InfoPrint 70

If your printer has the capability to duplex and has an option on the console to turn it on and off, you should understand the hierarchy of duplex processing options based on your selections.

The InfoPrint 45 and InfoPrint 70 can produce either simplex (single-sided) or duplex (double-sided) output. You can turn the duplex option **ON** or **OFF** at the printer console, depending upon what type of output you need. However, you can also turn duplexing on and off using the **sides** attribute in InfoPrint Manager. If you use InfoPrint Manager to turn duplexing on or off, the InfoPrint Manager setting will override the setting on the printer.

You can set the **sides** attribute on a document, default document, or an actual destination. You can also specify **duplex** or **simplex** in a form definition (formdef). If you set the attribute in a document, that setting overrides the value in the formdef. The formdef overrides the setting on the default document, which overrides the setting on the actual destination. All of these settings override the setting on the printer console.

Important: The default value of the **sides** attribute on all three objects (document, default document, and actual destination) is **Use default**. When InfoPrint Manager encounters that value, it considers the attribute “not set” and looks to the next item in the priority list to see if **sides** is set there. InfoPrint Manager keeps going down the list until it finds a value to use.

Some examples of this behavior include:

- You turn duplexing **OFF** at the console of your InfoPrint 45. Then, you submit a job to your InfoPrint 45 through InfoPrint Manager. The job uses a formdef that

requests duplex printing. The **sides** attributes on the document, default document, and actual destination are set to **Use printer default**.

InfoPrint Manager looks at the **sides** attribute on the document, and considers it "not set," so it looks at the formdef. The job prints duplex.

- You turn duplexing **OFF** at the console of your InfoPrint 70. Then, you use InfoPrint Submit Express to send a job with **Sides** set to duplex, and don't use a formdef. The **sides** attributes on the default document is set to **Use printer default** and on the actual destination is set to **1**.

InfoPrint Manager looks at the **sides** attribute on the document, and sees that InfoPrint Submit Express sets it to **2**. InfoPrint Manager ignores all of the other values and the job prints duplex.

For additional information about the sides attribute, see the "Attributes for documents and default documents" section in the "InfoPrint object attributes" chapter of the *InfoPrint Manager: Reference*.

Deleting orphan files and resubmitting jobs to MVS Download

Orphaned files are old files left in the Windows file system because you specified the **Keep CMD file for Resubmitting Jobs** check box when you started the MVS Download receiver to submit the jobs, and errors prevented InfoPrint from processing these print jobs. Their file names follow the MVS Download Destination Control file naming format:

`MVS_system_name.job_name.dataset_name.forms_name.yyddd.hhmmsstABCD.PRD`

Because orphan files can cause performance problems, you should either correct the problem that prevented the job from processing and then resubmit the job to MVS Download, or delete the orphan files from the system.

Deleting orphaned files from the system

Orphan files should only occur when there's an error. If you do not want to identify and correct errors, delete all files that are older than some site-determined period, such as three days.

To manually delete individual files:

1. In the **Management Console**, double-click the MVS Download receiver that you want to clean out.
2. In the **Viewing: Receiver xxx** dialog, find the **View Job Data** field and click **Browse**. The orphan and **.CMD** files that remain on the InfoPrint Manager server are listed in the **MVS Download Receiver Data** dialog that opens.
3. Highlight the job to be deleted and right-click it, then select **Delete** from the menu that appears.

Resubmitting jobs

Use this procedure to resubmit jobs through MVS Download:

1. In the **Management Console**, double-click the MVS Download receiver that received the failed print job.
2. In the **Viewing: Receiver xxx** dialog, find the **View Job Data** field and click **Browse**. The orphan and **.CMD** files that remain on the InfoPrint Manager server are listed in the **MVS Download Receiver Data** dialog that opens.
3. Right-click the **.CMD** file that failed.

4. Click **Edit** from the menu that appears to open the **.CMD** file as a text file.
5. Edit the file as you need to and save it.
6. Close the text editor.
7. Back in the **MVS Download Receiver Data** dialog, select and right-click the **.CMD** file again.
8. Click **Open** from the menu that appears to run the file.
9. In the **MVS Download Receiver Data** dialog, click **Cancel**.
10. In the **Viewing: Receiver xxx** dialog, click **Cancel**.

If you identify and correct print errors, re-submission of the file to MVS Download should delete the file once it is successful.

Using a Windows gateway printer

A Windows gateway printer is a Windows shared printer that you create on your InfoPrint Manager server system. This lets users anywhere in the network to submit print jobs through InfoPrint Manager. InfoPrint Manager organizes everyone's print jobs by putting them in a print queue in the order that it receives them, then sends them all to the correct printers. In addition, if you have InfoPrint Manager notifications running on your workstation, InfoPrint manager sends you messages about the status of your print job.

Users must follow the instructions in "Adding a Windows gateway printer to a workstation" to add the Windows gateway printer to their desktops. Administrator's can use the Management Console to create and administer a Windows gateway printer. The Management Console help includes instructions.

Note: When InfoPrint Manager is uninstalled, all Windows Gateway printers are deleted. Therefore, you must have your users manually delete the Windows Gateway printer from their desktops after the uninstall.

Adding a Windows gateway printer to a workstation

To add a Windows gateway printer to a workstation, instruct your users to follow the steps below. This procedure assumes that you have already created the Windows gateway printer on the InfoPrint Manager server system.

1. Locate the share name of the Windows gateway printer.
2. Follow the standard procedure for adding a network printer to your desktop. This procedure depends on the operating system that you use. For example, on Windows systems, use the **Add Printer Wizard** to create a printer that will be managed by network print server. When you are prompted for the name of the printer to connect to, enter the share name of the Windows gateway printer.
3. Once the connection to the Windows gateway printer is created, you can print to it just as you would print to any other printer.

Notes:

1. When the InfoPrint Manager server is uninstalled, any Windows gateway printers that exist on the server are deleted. However, connections to those Windows gateway printers that have been added to workstations are still present; they are still displayed in the Printers window, and you can still try to print to them from applications. Because the Windows gateway printer on the InfoPrint Manager server no longer exists, those print jobs will fail. If you try to print to one of these Windows gateway printer, you will get an

application-dependent message that does not identify this problem. To resolve this problem, delete the Windows gateway printer from your desktop and create a new one once your print system administrator has created a new one.

2. In certain situations, the system might try to use drivers that you have not intended to be used.

To avoid this situation, load print drivers for each client OS on the InfoPrint Manager server system so that they can be automatically installed onto client machines over the network (if they are not already on the client system).

Adding an Internet Printing Protocol (IPP) gateway printer to your desktop

The Internet Printing Protocol (IPP) is a data transport protocol that lets you print your documents to any IPP-enabled printer whose IP address you know. You can use IPP to send print data over both LANs and the Internet, so you can send print jobs to a network printer from your desk, your home office, or anywhere that you find an Internet connection. Not all printers are currently enabled to work with IPP. However, InfoPrint Manager provides an IPP gateway (a mechanism that lets you use IPP) even if your printers are not IPP-enabled.

Note: You must work with your InfoPrint Manager Administrator to have the IPP gateway enabled through the Management Console.

An **Internet Printing Protocol (IPP) gateway printer** is a printer that you create on a client workstation using IPP client software, such as the Windows 2000 IPP client. Users submit print jobs to that printer, and they are sent to InfoPrint Manager through the InfoPrint IPP gateway. The IPP gateway can then send the job on to any InfoPrint printer, even those that are not IPP-enabled.

To be able to print through an IPP gateway, you must first have IPP client software installed on your workstation or laptop. IPP client software is available from various printer vendors; check with your printing system administrator to see which IPP client your company is using. Once you have the IPP client software installed, to set up to print through the IPP gateway:

1. Ask your printing system administrator for the address of the printer that you want to print to.
2. Follow the instructions provided with your IPP client software for adding a printer to your desktop. When you are asked for the address of the printer, enter the address that you got in step 1.
3. Once the printer is added, you can print to it just as you would any other printer.

Submitting jobs through InfoPrint Manager hot folders

Mapping a network drive

On the end user system, use the standard Windows method to map a network drive (available in Windows Explorer) to the InfoPrint Manager hot folder. If there are multiple hot folders in the same directory, you only have to map one network drive to the parent directory; you will be able to access all of the subdirectories through it.

Submitting jobs through a hot folder

To submit a job through a hot folder, simply copy or move the print file to the hot folder.

Note: If you experience problems with hot folders submitting incomplete jobs to the InfoPrint Manager server, use the method described in “Staging jobs.”

Attention: To save the file, copy it. Files are deleted from the hot folder after submission.

Specifying job attributes

By default, jobs submitted through a hot folder use the attribute values in the default document and default job associated with the logical destination; and also by default, hot folder jobs are submitted to InfoPrint Manager with job notifications turned off. To receive notifications about jobs that you submit through hot folders, you must specify a **notification-profile** with an explicit **delivery-address** in the .att file. To specify other attributes or use different values for existing attributes, complete these steps.

1. Either on your system or in the hot folder itself, create a text file to use as your attributes file. Name the attributes file *filename.att*, where *filename* is the same as the file name of the print file. For example, if the print file is *report.pdf*, the attributes file is *report.pdf.att*.
2. In the attributes file, specify the InfoPrint attributes and values that you want to use for this job. For example, to print three single-sided copies of *report.pdf*, *report.pdf.att* looks like this:

```
copy-count = 3
sides = 1
```

Note: The attributes file is in the same format as a `-X` file passed to a `pdpr` command.

For information about job and document attributes, see *InfoPrint Manager: Reference*.

3. If you created the attributes file on your system, copy or move the file to the hot folder. The InfoPrint Manager logical destination recognizes the .att file extension as an attributes file and knows not to try to print it.
4. Copy or move the print file to the hot folder. The InfoPrint Manager logical destination sees the print file and looks for an attributes file with the same file name. Both of the files are taken and your attributes are used.

Staging jobs

You can stage jobs to InfoPrint Manager with this procedure:

1. Make a copy of the print file on your local system.
You will end up with 2 files: **report.pdf** and **copy of report.pdf**.
2. Rename the copy of the print file so that it has the same name as the original print file and the extension .stg.
Rename **copy of report.pdf** to **report.pdf.stg**.
3. Copy the new file to the hot folder.
Copy **report.pdf.stg** and paste it in the hot folder.

Note: The InfoPrint Manager logical destination ignores files with the .stg extension.

4. Change the extension back to the original extension when you want the job to print.
Rename **report.pdf.stg** back to **report.pdf**. InfoPrint Manager will pick up the renamed file and send it to print.

Submitting multiple-document jobs

You can use staging to print jobs that contain multiple documents. In this case, you stage an entire directory. The InfoPrint Manager logical destination prints the documents as one job, in the order that you copied the files into the directory.

1. Navigate to the hot folder (using Windows Explorer, for example).
2. In the hot folder directory, create a new folder named *jobname.stg*, where *jobname* is any name you choose.

Note: The InfoPrint Manager logical destination ignores directories with the .stg extension.

3. Copy the documents you want to print into the subdirectory in the **same** order that you want to print them.

Note: If you copy multiple files in a single operation, they might not be copied in the same order that you selected them. If the print order matters, copy the files one at a time.

4. To override the default attributes, create an attributes file called *jobname.att*, where *jobname* is the same as the subdirectory name, and copy it into the hot folder.
5. Rename the subdirectory from *jobname.stg* to *jobname*. The InfoPrint Manager logical destination then accepts all of the files in the subdirectory as a single job.

Submitting print jobs through the InfoPrint Manager LPD

The InfoPrint Manager Line Printer Daemon (LPD) is a utility that lets you submit print jobs from other operating systems using a Line Printer (LPR) client. The InfoPrint Manager LPD replaces the LPD that is supplied with the Windows operating system (TCP/IP Print Services), however, it submits the files it receives directly to an InfoPrint destination, not to a Windows printer. It also supports the -o options that are available with some LPR clients (-o options let you specify advanced InfoPrint print options such as formdefs and pagedefs).

Only one LPD can run on your InfoPrint Manager server system at a time. If you have TCP/IP Print Services installed, InfoPrint Manager disables it and enables the InfoPrint Manager LPD. If you would prefer to use TCP/IP Print Services, use the Management Console to change the service configuration. See the Management Console help for further instructions.

Important: If you have a different LPD installed, InfoPrint Manager does **not** disable it, but installs and starts the InfoPrint Manager LPD. You must stop one of the LPDs before you try to submit a print job using an LPR client.

To submit print jobs to the InfoPrint Manager LPD, you can use any LPR client. However, to be able to specify advanced InfoPrint options on the -o flag, you should use the **lprafp** sample code package. **lprafp** is an LPR client that is available as a free download from the InfoPrint Solutions Company Web site. The package includes executable forms of the **lprafp** client for the Windows and AIX

(version 5.1 and later) platforms. You can compile this code to use it on other platforms as well. InfoPrint Solutions Company does not provide support for the package.

Note: The Microsoft LPR client supports a `-o` flag, but it is not the same as the InfoPrint `-o`. Any values you pass to InfoPrint Manager using the Microsoft `-o` flag will be lost. In addition, some LPR clients provide print control functions, such as landscape print. The InfoPrint Manager LPD does not support these options.

Install and configure `lprafp` for Windows from the Web

For Windows operating system clients, the `lprafp` sample code package is available for free download from the InfoPrint Solutions Company Web site at <http://www.infoprint.com>. Use this procedure to locate and install the package:

1. Navigate to <http://www.infoprint.com> in your Web browser.
2. Click **Support and maintenance**.
3. Select **InfoPrint Manager for Windows** in the **Software Support** list.
4. On the InfoPrint Manager for Windows Home page, click **Downloads**.
5. On the Downloads page, click **InfoPrint Manager for Windows NT and Windows 2000 downloads**.
6. Click **lprafp - LPR sample code package** and click **FTP**.
7. Save the `lprafp.zip` file to your machine.
8. Use a zip utility to unzip the package.
9. Open the `readme.txt` file and follow the instructions for installing the package on a Windows system.

Preparing to submit print jobs

When you submit jobs to the InfoPrint Manager LPD, it uses a mapping file to match the keywords you specify on the `-o` option with InfoPrint attributes. A sample mapping file comes with InfoPrint Manager for Windows; before you submit any print jobs to the InfoPrint Manager LPD, you should modify this file to meet your needs.

To modify the mapping file do this:

1. Open the file `<install path>\var\pd\lpd\lpdmap.txt` (where `<install path>` is the directory where InfoPrint Manager is installed) in a text editor such as Notepad.
2. Read all of the instructions in the mapping file before you make any changes.
3. Edit the mappings as necessary and save the file using the same name.

Because all LPR clients use different keywords, it is impossible to list them all. The mappings listed are "best guess" mappings and might not generate the results you need. The best way to see what values you need to add or change is to uncomment the line that reads:

```
* DEBUG
```

and save the file. (To uncomment the line, delete the `*`.) Submit a print job through the LPD and check the output. If the job fails or if it prints incorrectly, check the error messages in the server log in the Management Console. Use them to help

determine which keywords are missing or mapped incorrectly. When you are finished, be sure to open the mapping file and comment the DEBUG line out again.

Submitting print jobs

When you submit print jobs using the LPR client, all you need to specify is the InfoPrint Manager server and the name of an InfoPrint destination (logical or actual). The InfoPrint Manager LPD submits the job to the InfoPrint print spool.

Checking job status

This section describes some ways you can find out the status of print jobs that you submit through InfoPrint Manager.

Checking status using notifications

The easiest way to find out the status of print jobs that you submit is to have InfoPrint Manager send you messages about them. You can use the InfoPrint Manager Notifications client, or if you submitted the job using Select, you can use Select notifications. Installing and setting up the Notifications client is described in the *InfoPrint Manager for Windows: Planning and Installation Guide* book. In addition, see Chapter 7, “Using InfoPrint Manager notifications,” on page 19 and “Working with Select notifications” on page 22 for more detailed instructions about using the Notifications client and Select notifications.

Checking status from the Printers window

If you cannot or choose not to use InfoPrint Manager notifications, you might be able to check the status of your jobs manually. If you submit jobs to a Windows gateway printer or to a Select printer, follow these steps:

1. Click the Windows **Start** button, and select **Settings** → **Printers** to open the Printers window.
2. In the Printers window, double-click the printer that you sent your job to. The job window for that printer will open.
3. Find your job in the list of documents. If the job isn't in the list, it might be finished printing.

Note: For Windows gateway printers, print jobs will appear in this list only if the gateway was configured to report accurate job status back to workstations.

Interrupting and restarting a job that is currently printing on an InfoPrint 4000/4100

Use this procedure:

- To interrupt the job that is currently printing and start printing it again
- To interrupt the job that is currently printing, print another job, and then start the job that you interrupted.
- To interrupt the job that is currently printing, move the job to a different printer, and start printing the job again.


This procedure does NOT stop the printer; it only stops the job that is currently printing. Other jobs continue to print on this printer.

Once the job is stopped, the next job in the queue will start to print. To stop the printer (for example, to replace toner), use the procedure “Stopping a printer to perform scheduled maintenance” on page 317.

Note: Refer to the online help in the InfoPrint Manager GUI if you need instructions on completing any of these steps.

When you use the “Interrupting a job that is currently printing” procedure, the job fills a physical sheet, stops, and prints a message after the last page indicating the number of the last (AFP) page printed. The job shows on the GUI as **Paused**. When the job restarts, it starts on the **next** page of the job in the next logical partition. InfoPrint Manager prints a message at the end of the restarted section of the job indicating the page on which the printing started. You might want to use this procedure if you are printing a very long job, and you need to print another, more urgent job immediately.

Interrupting a job that is currently printing

1. Open the InfoPrint Manager Operations GUI or the InfoPrint Manager Administration GUI.
2. In the GUI, find the printer where the currently printing job is, and select it.
3. Right-click on the printer, and select **Interrupt Printing Job** or left-click on the printer and then left-click on the  icon on the toolbar.

Note: If the **Interrupt Printing Job** action does not appear on the Printer menu or toolbar, use the **Customize** dialog to add the action.

4. Select from these options:
 - Click **Now** to interrupt the job as soon as possible
 - Click **After current copy** to interrupt the job after the current copy has finished printing.
5. Click **OK**.

The job that is currently printing stops printing, its icon changes to black, and the job is listed in the job window of the main InfoPrint Manager GUI window. Other jobs continue to print on this printer.

Restarting the interrupted job

To restart the interrupted print job:

- In the GUI, right-click on the interrupted job and select **Resume**.
- Select the job and left-click on the



icon on the toolbar.

Stopping, restarting, or pausing a job that is currently printing

Use this procedure to stop printing a job and start printing it again or to stop printing a job, move it to a different printer, and start printing again. If you are printing an AFP print job, you can also use this procedure to stop printing a job and start it again from any page in the job, not just from the beginning.

This procedure does NOT stop the printer; it only stops the job you select.

Once the job is stopped, the next job in the queue will start to print. To stop the printer (for example, to replace toner), use the procedure “Stopping a printer to perform scheduled maintenance” on page 317.

Note: If you need instructions on completing any of these steps, see the online help in the InfoPrint Manager GUI.

When you use the “Stopping the job” procedure, InfoPrint Manager considers the job cancelled and does not collect any checkpoint information about the job. Unless the operator changes the page range before releasing the job to print again, the job restarts printing at page 1. Be sure to remember any n-upping associated with the job when selecting the page range so that the pages are placed into the correct partition in relation to each other. You might want to use this procedure when you realize that a job has started to print on the wrong form.

Stopping the job

1. Open the InfoPrint Manager Operations GUI or the InfoPrint Manager Administration GUI.
2. In the GUI, find the job that you want to stop and select it.
3. Click **Job** → **Hold**.

Note: If the **Hold** item doesn’t appear in the **Job** menu, use **Add/Remove Menu Items** to add it.

4. Click **OK**.

The job stops printing, the icon changes to black, and the job is listed in the job window of the main InfoPrint Manager GUI window.

Restarting the job

Use this procedure to do one of these:

- Print the entire job on the same printer it was printing on before.
- Print the entire job on a different printer.
- Print part of the job (such as page one to page fifty, or page twelve to the end).

Important:

- When you use **Job** → **Hold**, the job information resets to the beginning of the job. Checkpoint information is not stored.
- You can only start printing in the middle of the job if the job is transformed to AFP before it gets printed. You cannot print part of an ASCII, KGL, metacode, or LCDS job; you have to print the whole job.
- You can only start printing in the middle of the job if the job has only one printable document. If it has more than one printable document, you either have to print the whole job or use spacing to skip a section of the job. See the “Moving backward or forward in a job that is currently printing” on page 316 for instructions on spacing.

If you submitted this job using DPF from a host system, you can start printing from any page in the job, but InfoPrint Manager ignores any value you enter for the end page. You will always print to the end of the job.

Note: Spacing will only work if you send the job to a PSF DSS printer.

To restart the print job:

1. To print the entire job on the same printer it was printing on before, select the job in the job window and click **Job → Release**. The job will start printing from the first page.
2. To print the entire job on a different printer, skip to **Before you Continue** between steps 8 and 9 below.
3. To print part of the job, figure out what page you want to start printing from.

Important: If you don't want to start printing from the first page of the job, be careful when you choose which page to start with. Duplex and n-up jobs can be confusing because you have to start printing with the **first** page on the **front** side of the sheet of paper. If you don't choose the correct start page, the job will print, but the sequence will probably be wrong.

For example, if you are printing a 2-up duplex job, each sheet of paper actually has four pages printed on it, like this:

Table 47. 2-up duplex print job: front and back views

| | Front of sheet | Back of sheet |
|------------|----------------|---------------|
| Sheet one | | |
| Sheet two | | |
| Last sheet | | |

Since you have to start printing this job at the first page on the front side, you can choose page one or page five (or any other page that would fall in that position). If you choose a different page, the sequence of pages will be wrong, and the job won't print correctly.

4. Figure out what page you want to stop printing on (if you don't want to print all the way to the end of the job).

You don't have to be as precise on the last page to print; the last page can be in any location on the sheet of paper.

5. Select the job you want to print.
6. With the job selected, click **Job → Change Page Range to Process**.

If you don't see the **Change Page Range to Process** item in the **Job** menu, use **Add/Remove Menu Items** to add it.

7. In the **Change Page Range to Process** dialog, select **Range of Pages** and type the start page and end page you decided.

Note: If you submitted this job using Distributed Print Facility (DPF), InfoPrint Manager ignores the end page that you specify. DPF jobs always print from the start page you specify to the end of the job.

8. Click **OK**.

Before you continue:

You should only move a job to an InfoPrint printer that uses the same destination support system (DSS) as the one the job was originally submitted to. If you move the job to a printer that uses a different DSS and the new printer doesn't support all of the attributes of the job, the job will fail to print. To check which DSS your InfoPrint printer uses:

- a. Select the printer in the tree view of the Main window of the InfoPrint Manager GUI.
- b. See if the **Type** column appears in the details view. The **Type** column displays the DSS that the InfoPrint printer uses.
- c. If you don't see the **Type** column, use **Add/Remove menu items** to add it.

Continue with step 9.

9. Select the job again and click **Job → Move job**.
10. In the **Move Jobs** dialog, select the printer to print the job on. You can choose the same printer it was printing on before or a different one.
When you release the job in step 12 below, if the job is accepted it will go back into the queue and wait to be printed. Depending on how many jobs are ahead of it in the queue, it might take a while for the job to print. To print the job right away, you can either move it to the top of the queue (so it prints next) or you can change its priority (so it prints sooner, but not necessarily next).
11. To move the job to the top of the queue, select the job in the InfoPrint Manager GUI and use the **Make Job First** task. To change the priority of the job, use the **Change Priority** task.
12. Select the job in the job window and click **Job → Release**.

Note: If the task you want to use doesn't appear in the menu, use **Add/Remove menu items** to add it.

Pausing a job that's printing

1. Open the InfoPrint Manager Operations GUI or the InfoPrint Manager Administration GUI.
2. Find the job that you want to pause and select it.
3. Click either **Job → Pause → Now** or **Job → Pause → After current copy**.

Note: If the **Pause** item doesn't appear in the **Job** menu, use **Add/Remove Menu Items** to add it.

4. Click **OK**.

The job will stop printing, the icon will change to black, and the job will be listed in the job window of the main InfoPrint Manager GUI window.

5. To resume the printing of this job, click **Job → Resume**.

Pausing a job that's printing

When you use the use this procedure, InfoPrint Manager stops the job, checks to see if the paused job is indeed the job currently printing, and collects checkpoint information about the job if it is. The job shows on the GUI as **Paused**. Assuming that the operator does not take actions that invalidate the checkpoint information when the job is resumed, it should restart at the checkpoint boundary. If the checkpoint information is invalidated, the job restarts at page 1 unless the operator changes the page range before resuming the job. Changing the job attributes so that the job would have to be re-ripped before printed is an example of an action that would invalidate the checkpoint information.

1. Open the InfoPrint Manager Operations GUI or the InfoPrint Manager Administration GUI.
2. Find the job that you want to pause and select it.
3. Click either **Job → Pause → Now** or **Job → Pause → After current copy**.

Note: If the **Pause** item doesn't appear in the **Job** menu, use **Add/Remove Menu Items** to add it.

4. Click **OK**


The job will stop printing, the icon will change to black, and the job will be listed in the job window of the main InfoPrint Manager GUI window.

5. To resume the printing of this job, click **Job → Resume**.

Pausing and restarting an actual destination

Use these procedures to pause and restart an actual destination. You might want to pause an actual destination when you are printing a long job, so that you can perform maintenance on the printer.

Pausing an actual destination

1. Open the InfoPrint Manager Operations GUI or the InfoPrint Manager Administration GUI.
2. In the GUI, find the actual destination you want to pause.
3. Right-click on the actual destination, and select **Stop** or left-click on the actual destination and then left-click on the  icon on the toolbar.


Note: If the **Stop** action does not appear on the menu or toolbar, use the **Customize** dialog to add the action.

4. Select from these options:
 - Click **Now** to pause the actual destination
 - Click **After current copy** to pause the actual destination after the current copy has finished printing.
 - Click **After current job** to pause the actual destination after the current job has finished printing.
5. Click **OK**.

The actual destination stops printing, and the jobs processing on the actual destination stay in the same state until the actual destination starts again.

Resuming the actual destination

To resume the actual destination:

- In the GUI, right-click on the actual destination and select **Resume**.
- Select the actual destination and left-click on the  icon on the toolbar.

Moving backward or forward in a job that is currently printing

In InfoPrint Manager, moving from page to page in a job is called *spacing the printer*:

- *Forward spacing* is moving to a point later in the job (such as skipping from page 10 to page 15).
- *Backspacing* is moving to a point earlier in the job (such as backing up from page 40 to page 20).

Spacing a printer

Things to remember:

- **You can only space a printer that uses the PSF Destination Support System (DSS) and one of these attachment types:**
 - PSF TCP/IP
 - PSF BSD
 - PSF Other

To see what DSS your printer uses, do this:

1. Select the printer in the tree view of the Main window of the InfoPrint Manager GUI.
2. See if the **Type** column appears in the details view. The **Type** column displays the DSS that the InfoPrint printer uses.
3. If you don't see the **Type** column, use **Add/Remove menu items** to add it.

- **You can only space a printer after a job has already started to print.**

If you only want to print a section of a job (such as page 11 to page 20) or to start printing from a page other than the first page of the job, use the **Change Page Range to Process** task in the InfoPrint Manager GUI.

- **Spacing works better on high-speed printers than on low speed printers.**

While spacing is supported on all printers that you print to using the PSF DSS, it is very difficult to space printers that print 40 pages per minute (ppm) or less. Spacing works adequately on printers that print between 60 and 100 ppm, and works very well with high-speed InfoPrint printers that are configured correctly.

- **The InfoPrint 2000, InfoPrint 3000, InfoPrint 4000, and InfoPrint 4100 printers require additional configuration for spacing to work efficiently.**

See the **Setting up high speed printers for spacing** topic for instructions on configuring your printer.

- **Page numbers refer to pages of the print job, not necessarily to any page numbers in your document.**

For example, in a book, the first page of chapter one is usually "page 1." However, it might be page 15 of the print job, because of the title page, credits, and table of contents.

- **You cannot space to the back side of a sheet of paper.**

If you are printing a duplex job, you will always print both the front and back sides of the sheet of paper that you space to.

To space a printer, do this:

1. Start the InfoPrint Manager GUI.
2. In the GUI, find the InfoPrint printer that you need to space.
3. Select the InfoPrint printer by clicking on it, then click **Printer** → **Stop**.

Note: If you don't see **Stop** in the menu, use **Add/Remove menu items** to add it.

4. In the **Stop printer_name** dialog, select **Pause** and **Now**, and click **OK**.
Even though you selected **Now**, the printer will keep printing for a while because it has to get to a point in the job where it can stop. For InfoPrint 2000, InfoPrint 3000, and InfoPrint 4000 printers that are configured correctly, you shouldn't have to wait more than 10 seconds. For other printers, you might have to wait longer.
5. Once the printer has stopped printing, look at the last sheet that printed. Write down the number of that sheet of the job.
6. Figure out what sheet of paper in the job you want to space to. Write down the number of that sheet of the job.
7. Figure out the number of sheets of paper you need to space.
 - To **forward space** the printer:
Subtract the number of the sheet that printed last (from step 5) from the number of the sheet that you want to skip to (from step 6), and then subtract one. Like this:
 $(\text{number from step 6}) - (\text{number from step 5}) - 1 = \text{number of sheets to skip}$
 - To **backspace** the printer:
Subtract the number of the sheet that you want to go back to (from step 6) from the page that printed last (from step 5), and add one (for the current page). Like this:
 $(\text{number from step 5}) - (\text{number from step 6}) + 1 = \text{number of sheets to back up}$
8. Determine the number of "sides" to space the printer.
 - If you are printing a simplex job, the number of sides is the same as the number of sheet from step 7.
 - If you are printing a duplex job, multiply the number from step 7 by two to get the number of sides. $(\text{number from step 7} \times 2 = \text{number of sides})$
9. In the InfoPrint Manager GUI, find the printer you want to space and select it.
10. With the printer selected, click **Printer** → **Space**.
11. In the **Space printer_name** dialog, select **Backspace** or **Forward space** and type the number of sides you found in step 8.
12. Click **OK**.
13. Make sure the printer is still selected and click **Printer** → **Resume** to start the printer again.

Stopping a printer to perform scheduled maintenance

Use this procedure to stop a printer so you can perform routine maintenance, such as updating the microcode, changing paper, or cleaning the printer. While you have the printer stopped, InfoPrint Manager will not be able to send or schedule jobs to it. This procedure will work for printers that use any DSS.

1. Open the InfoPrint Manager Operations GUI or the InfoPrint Manager Administration GUI.

2. In the GUI, find the printer that you want to stop and select it.
3. Use **Printer**—>**Disable** to disable the printer.
The InfoPrint printer will stop accepting jobs, but the printer will not stop printing immediately. All of the jobs that were in the **processing** state before you disabled the printer will print before it stops.
4. After the printer stops printing, you can perform whatever maintenance you need to.
5. When you are finished and the printer is ready to receive jobs again, go back to the InfoPrint Manager GUI.
6. Find the printer in the GUI and select it.
7. Use the GUI to enable the printer again.
The printer will be available to accept and print jobs again.

Fixing a printer problem and starting to print again

Use this procedure when the printer stops printing because of a paper jam, "out of paper" error, or for some other reason.

Note: Refer to the online help in the InfoPrint Manager GUI if you need instructions on completing any of these steps.

Try this first

"Out of paper" errors and some paper jams are easy to recover from. Most of the time, you don't have to do anything to InfoPrint Manager to fix them; InfoPrint Manager just waits until the printer is ready to print again. While it is waiting, InfoPrint Manager continues to accept jobs and schedule them to the printer.

If the printer stops printing because of a problem, first try this.

1. Check the printer.
 - If a lot of pages of the job are ruined and need to be reprinted, stop here. Don't finish this procedure. Use the "Fixing more complicated problems" procedure below instead.
 - Otherwise, load paper if the bins are empty or clear paper jams as the printer console indicates. Once everything is clear, the printer should reset itself and continue sending jobs. InfoPrint Manager should pick up where it left off.
2. Find the printer in the InfoPrint Manager GUI. Make sure that its status is **ready**. If it is not, select the printer and use the GUI to enable it.
3. If just a few pages of the print job need to be printed again, the easiest thing to do is to resubmit the job and print just those pages. You can only print part of the job if you are using the PSF DSS and if the job will be transformed to AFP before it is printed.

Fixing more complicated problems

Use this procedure when the problem is more difficult to fix or if you have to reprint numerous pages of a job.

1. Open the InfoPrint Manager GUI.
2. Find the InfoPrint Manager printer (also called an actual destination) that sends jobs to that printer and select it.
3. Use the GUI to disable the printer.

The printer won't be able to accept any print jobs until you enable it again.

4. If the printer stopped printing in the middle of a job, find that job in the GUI and select it.
5. With the job selected, click **Job → Hold**.

Note: If the **Hold** item doesn't appear in the **Job** menu, use **Add/Remove Menu Items** to add it.

6. Click **OK**.

The job will stop printing, the icon will change to black, and the job will be listed in the job window of the main InfoPrint Manager GUI window.

7. Decide what you want to do with any other jobs that are in the queue waiting for this printer. Some of the options are:
 - Leave them in the queue, so they print when you enable the printer again. If you can fix the problem quickly, this option is the easiest one. In addition, if your printers are pooled, the other printers will take care of all of the jobs until this one is ready.
 - Move them to a different printer so they can be scheduled to print while you are working on this one.
 - Delete them. You should only consider this option if it is easier to resubmit the jobs than to use other methods to recover them.
8. Fix the problem at the printer.

Once the problem is fixed, the printer might start to print again, just to clear the pages that were in the buffer before you disabled it and deleted the job. If any other jobs were in **processing** state when you disabled the printer, they will print as well.

9. Go back to the InfoPrint Manager GUI, find the InfoPrint printer again, and select it.
10. Use the GUI to enable the printer.

The printer will be available to accept jobs again. If you left jobs in the queue, the printer should start accepting and printing them.

Restarting the job that was printing when the problem occurred

You can either:

- Start the job from the beginning.
- Start the job from a point before the problem occurred (so the ruined pages get printed).

Important:

- You can only start printing in the middle of the job if the job is transformed to AFP before it gets printed. You cannot print part of an ASCII, KGL, metacode, or LCDS job; you have to print the whole job.
- You can only start printing in the middle of the job if the job has only one printable document. If it has more than one printable document, you either have to print the whole job or use spacing to skip a section of the job. Refer to the **Moving backward or forward in a print job that's already printing** topic for instructions on spacing.

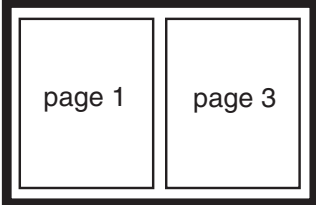
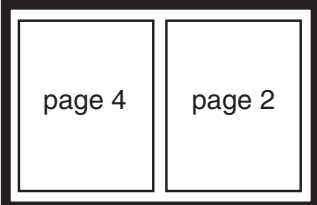
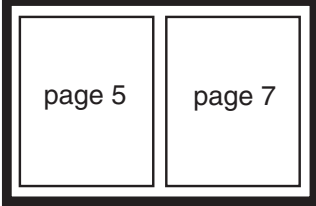
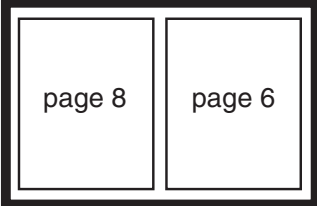
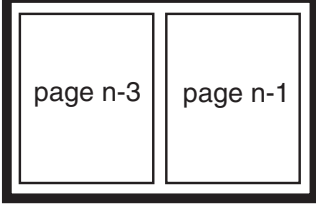

Note: Spacing will only work if you send the job to a PSF DSS printer.

1. To print the entire job on the same printer it was printing on before, select the job in the job window and click **Job → Release**. The job will start printing from the first page.
2. To print the entire job on a different printer, skip to **Before you Continue** between steps 8 and 9 below.
3. To print only part of the job, figure out what page you want to start printing from.

Important: If you don't want to start printing from the first page of the job, be careful when you choose which page to start with. Duplex and n-up jobs can be confusing because you have to start printing with the **first** page on the **front** side of the sheet of paper. If you don't choose the correct start page, the job will print, but the sequence will probably be wrong.

For example, if you are printing a 2-up duplex job, each sheet of paper actually has four pages printed on it, like this:

Table 48. 2-up duplex print job: front and back views

| | Front of sheet | Back of sheet |
|------------|--|---|
| Sheet one |  |  |
| Sheet two |  |  |
| Last sheet |  |  |

Since you have to start printing this job at the first page on the front side, you can choose page one or page five (or any other page that would fall in that position). If you choose a different page, the sequence of pages will be wrong, and the job won't print correctly.

4. Decide what page you want to stop printing on (if you don't want to print all the way to the end of the job).
You don't have to be as precise on the last page to print; the last page can be in any location on the sheet of paper.
5. Select the job you want to print.
6. With the job selected, click **Job → Change Page Range to Process**.

If you don't see the **Change Page Range to Process** item in the **Job** menu, use **Add/Remove Menu Items** to add it.

7. In the **Change Page Range to Process** dialog, select **Range of Pages** and type the start page and end page you decided above.

Note: If you submitted this job using Distributed Print Facility (DPF), InfoPrint Manager ignores the end page that you specify. DPF jobs always print from the start page you specify to the end of the job.

8. Click **OK**.

Before you continue:

You should only move a job to an InfoPrint printer that uses the same destination support system (DSS) as the one the job was originally submitted to. If you move the job to a printer that uses a different DSS and the new printer doesn't support all of the attributes of the job, the job will fail to print. To check which DSS your InfoPrint printer uses:

- a. Select the printer in the tree view of the Main window of the InfoPrint Manager GUI.
- b. See if the **Type** column appears in the details view. The **Type** column displays the DSS that the InfoPrint printer uses.
- c. If you don't see the **Type** column, use **Add/Remove menu items** to add it.

Continue with step 9.

9. Select the job again and click **Job → Move job**.
10. In the **Move Jobs** dialog, select the printer that you want to print the job on. You can select the same printer it was printing on before or a different one.
When you release the job in step 12 below, if the job is accepted it will go back into the queue and wait to be printed. Depending on how many jobs are ahead of it in the queue, it might take a while for the job to print. If you want the job to print right away, you can either move it to the top of the queue (so it prints next) or you can change its priority (so it prints sooner, but not necessarily next).
11. To move the job to the top of the queue, select the job in the InfoPrint Manager GUI and use the **Make Job First** task. To change the priority of the job, use the **Change Priority** task.
12. Select the job in the job window and click **Job → Release**.

Note: If the task you want to use doesn't appear in the menu, use **Add/Remove menu items** to add it.

Part 6. Appendixes

Appendix A. IPDS print operator commands

InfoPrint Manager offers a comprehensive set of operator commands that can be used to manage printing on IPDS printers. These commands can be used to help manage printing priorities and also help by providing the operator with functions that are useful when dealing with problems that might occur in the printing system. This table describes several of the most commonly used operator tasks, and their corresponding commands. For more information, see the .

| | Task | Description | InfoPrint Manager Command Syntax |
|---|-------------------|---|---|
| 1 | Disable | Stop a printer from receiving new jobs. | <i>pddisable -cd dest</i> where <i>dest</i> specifies either a logical or an actual destination (printer) object. |
| 2 | Enable | Allow a printer to receive new jobs. | <i>pdenable -cd dest</i> where <i>dest</i> specifies either a logical or an actual destination (printer) object. |
| 3 | Query active job | Query which job is actively printing on a printer Note: The query response is based on the last set of station counters obtained from the printer, which is printing pages continuously. To get an absolutely accurate query you must: <ul style="list-style-type: none"> • Pause the printer (7) • Enter the query • Resume the printer (11). | <i>pdlc -f "destination-name-requested==ldest && current-job-state==printing" server:</i> where <i>server</i> specifies the InfoPrint AIX server to which the job was submitted, and <i>dest</i> specifies the actual destination (physical printer). |
| 4 | Query page number | Query the page number of the currently printing page. See Note after (3). | <i>pdlc -cj -r current-page-printing jobid</i> where <i>jobid</i> specifies the job-identifier attribute. IBM recommends using the global ID, which follows the convention <i>server:0123456789</i> where <i>server</i> specifies the name of the InfoPrint AIX server to which this job was submitted and 0123456789 indicates a 10-digit numeric value assigned by the InfoPrint spooler. You can determine the job-identifier attribute value by specifying: <i>pdlc -cj server:</i> |
| 5 | Query job details | Query the number of copies, sheets and pages stacked for a job. See Note after (3). | <i>pdlc -cj -r "job-copies-completed media-sheets-completed pages-completed" jobid</i> where <i>jobid</i> specifies the job-identifier attribute. |
| 6 | Clean | Remove all jobs from a printer. | <i>pdcclean ldest</i> where <i>ldest</i> specifies the logical destination (logical printer). |

| | Task | Description | InfoPrint Manager Command Syntax |
|----|----------------|---|---|
| 7 | Pause printer | Pause a printer immediately. | <i>pdpause -cd dest</i> where <i>dest</i> specifies the actual destination (physical printer). |
| 8 | Pause printer | Pause a printer after the current copy completes. | <i>pdpause -cd -w after-current-copy dest</i> where <i>dest</i> specifies the actual destination (physical printer). |
| 9 | Pause printer | Pause a printer after the current job completes. | <i>pdpause -cd -w after-current-job dest</i> where <i>dest</i> specifies the actual destination (physical printer). |
| 10 | Resume printer | Resume a printer that had been paused. | <i>pdresume -cd dest</i> where <i>dest</i> specifies the actual destination (physical printer). |
| 11 | Cancel job | Cancel a specific job. | <i>pdrm jobid</i> where <i>jobid</i> specifies the job-identifier attribute. |
| 12 | Pause job | Pause a specific job after the current copy completes. | <i>pdpause -cj -w after-current-copy jobid</i> where <i>jobid</i> specifies the job-identifier attribute. |
| 13 | Pause job | Pause a specific job immediately. | <i>pdpause -cj jobid</i> where <i>jobid</i> specifies the job-identifier attribute. |
| 14 | Pause job | Pause the job that is currently printing immediately. | <i>pdpause -cd -j dest</i> where <i>dest</i> specifies the actual destination (physical printer). |
| 15 | Pause job | Pause the job that is currently printing after the current copy. | <i>pdpause -cd -j -w after-current-copy dest</i> where <i>dest</i> specifies the actual destination (physical printer). |
| 16 | Resume job | Resume a job that was paused. | <i>pdresume -cj jobid</i> where <i>jobid</i> specifies the job-identifier attribute. |
| 17 | Back space | Back space (reprint a specific number of sides) the job that is printing. | <i>pdspace -cd -b sidecount dest</i> where <i>dest</i> specifies the actual destination (physical printer). |
| 18 | Reprint | Reprint the job that is printing from the beginning. | <i>pdspace -cd -b -1 dest</i> where <i>dest</i> specifies the actual destination (physical printer). |
| 19 | Forward space | Forward space (skip a specific number of sides) the job that is printing. | <i>pdspace -cd -f sidecount dest</i> where <i>dest</i> specifies the actual destination (physical printer). |

If one of these commands is received and it affects a job that has been sent or is in the process of being sent to the printer, InfoPrint Manager immediately stops sending data to the printer and sends the printer a command to stop printing (this applies to commands 7, 9, 10, 12-15).

For printers that support , like the InfoPrint 4000, the printer will stop in a few seconds. For printers without this support, some pages will likely print before the printer stops.

The number of pages that print before the printer stops will vary depending on the number, size, and complexity of jobs that are in process as well as the speed and type of printer involved. Once the printer has stopped, InfoPrint Manager performs the steps necessary to execute the requested operator command.

Appendix B. IPDS error recovery

When driving an IPDS printer, InfoPrint Manager sends page and resource data to the printer. The printer reports status and errors back to InfoPrint Manager. The printer status information is in the form of station counters representing progress of pages sent to the device through the printer microcode and the physical printing mechanism. Station counters report the number of pages and the number of copies of pages proceeding through each point in the printer.

InfoPrint Manager requests printer status information (an acknowledgement request) after sending each job. The acknowledgement response contains the latest values of all the printer station counters. Once all pending jobs have been processed, InfoPrint Manager polls the printer periodically until all the pages of each job have been stacked.

The actual destination object **ack-interval** attribute is configurable and defines how often InfoPrint Manager requests updated station counters from the printer while processing a particular job. The value for this attribute is specified in terms of pages and can be from 1 to 9999; the default value is 100 pages. For a 360 page job, an **ack-interval** setting of 100 pages means that InfoPrint Manager will send an acknowledgement request to the printer after sending pages 100, 200, 300, and 360.

The printer responds to an acknowledgement request and returns station counters when all of the pages up to that point have been processed. This does not necessarily mean that all of those pages have printed or are stacked. The acknowledgement response from the printer after the 100th page will show that 100 pages have been processed (received). The printer might report, however, that only 10 pages have stacked.

The **ack-interval** value affects printing performance and the currency of job status information. A small **ack-interval** value causes increased communication and processing and can cause a reduction in printer throughput. A small **ack-interval** value will, however, increase the frequency that job attributes such as **current-page-printing**, **job-copies-completed**, **media-sheets-completed**, and **pages-completed** are updated. A small **ack-interval** value will also enable the InfoPrint Manager software to have more recent station counters than it would with a large **ack-interval** value.

Errors reported from the printer can be grouped into these categories:

- “IPDS error recovery: Data stream errors”
- “IPDS error recovery: Insufficient memory in the printer” on page 331
- “IPDS error recovery: Intervention required conditions” on page 332
- “IPDS error recovery: Unrecoverable problems” on page 333

IPDS error recovery: Data stream errors

For data stream errors, the job might continue printing or the job might be terminated, depending on the severity of the error. There are hundreds of specific data stream errors. If one data stream error is defined for the error, InfoPrint Manager directs the printer to continue processing the page and take an alternate exception action.

When a data stream error occurs, messages are produced describing the problem and the recovery actions performed. The messages report details about the error and include the page number where the error occurred. After InfoPrint Manager receives a data stream error from the printer and produces a message, it uses station counters returned from the printer to continue printing without skipping or reprinting any pages.

Reporting of some data stream errors (using undefined code points in a font or printing outside of the valid printable area) can be controlled with job attributes. This allows the job submitter to decide whether error messages or printer error marks should be generated when these type of errors are encountered:

- “Data stream error example 1 (job continues printing):”
- “Data stream error example 2 (job is terminated, no pages print):”
- “Data stream error example 3 (job is terminated; some pages print):” on page 331

Data stream error example 1 (job continues printing):

If page 3 of a 10–page document attempts to print outside the valid printable area (an error) and the submitter specified (data-fidelity-problem-reported=all), this occurs:

1. Pages 1-2 and 4-10 in the document print normally.
2. For page 3, the printer prints only the data that is inside the valid printable area. In addition, a printer error marker (PEM) is printed on the page where the print data extends outside the valid printable area.
3. After all 10 pages have printed, a set of messages is printed:

| | |
|-----------|---|
| 0420-094: | The following messages were generated for file /info/afp/baddata with Job ID 123. This file printed on the InfoPrint destination ip60, which is a 3160 destination. |
| 0420-484: | The destination reported that an attempt was made to print outside of the valid printable area. |
| 0420-249: | InfoPrint received IPDS exception X'08C1..00', action code X'01' from the destination. |
| 0420-098: | The error occurred while printing page 3 of copy 1 of this print job. |
| 0420-254: | The destination reported an error that caused InfoPrint to stop processing the page. |

Data stream error example 2 (job is terminated, no pages print):

If a document is submitted and it requests a specific form definition which does not exist, this occurs:

1. The document does not print. However, auxiliary sheets such as the start sheet (header) and end sheet (trailer) page, if requested, do print.
2. A message page will print with these messages:

| | |
|-----------|--|
| 0420-094: | The following messages were generated for file /info/afp/testfdef with Job ID 456. This file printed on the InfoPrint destination ip60, which is a 3160 destination. |
|-----------|--|

| | |
|-----------|---|
| 0420-128: | ERROR: InfoPrint cannot find or cannot access the FORMDEF resource named F1BAD. |
| 0420-060: | The error occurred with the object type page with token name PAGE0001. |
| 0420-060: | The error occurred with the object type document with token name ASCII. |
| 0420-098: | The error occurred while printing page 1 of copy 1 of this print job. |

Data stream error example 3 (job is terminated; some pages print):

If page 5 of a 10–page document requests a font (C0D0GT15) which cannot be located, this occurs:

1. Pages one through four print; page five does not print. Printing of the document ends; pages 6 through 10 also do not print.
2. A message page will print with these messages:

| | |
|-----------|--|
| 0420-094: | The following messages were generated for file /info/afp/long.list3820 with Job ID 167. This file printed on the InfoPrint destination psf4317, which is a 4317 destination. |
| 0423-284: | InfoPrint mapped the FGID, GCSGID, width, vertical size combination: 230, 0, 96, 160 to the FCS name C0D0GT15. The FGID.GRD mapping file specified that this mapping be performed. |
| 0423-291: | Map Coded Font (MCF) structured field could not be processed because InfoPrint could not locate the font character set C0D0GT15. Attempted resolution/type(s): 300-pel Font Fidelity for this job was CONTINUE. Destination supported resolution/type(s): 300-pel. |
| 0420-060: | The error occurred with the object type Active Environment Group with token name 1. |
| 0420-060: | The error occurred with the object type page with token name 1. |
| 0420-060: | The error occurred with the object type document with token name LONG. |
| 0420-098: | The error occurred while printing page 1 of copy 1 of this print job. |
| 0423-302: | The font reference in the MCF1 structured field, repeating group number 1, with sequence number 1, at file offset 118, could not be processed successfully. Additional error and diagnostic messages follow. |
| 0420-729: | The error occurred in file /info/afp/long.list3820. The structured field in error was structured field EAG with code X'D3A9C9' and sequence number 1 located at file offset 250. |

IPDS error recovery: Insufficient memory in the printer

In some cases, a printer might not have sufficient storage to process the data or resources required for a page. When this occurs, InfoPrint Manager responds by deleting resources in the printer which are not required for the page and then tries to print the page again. Frequently, this recovery will allow the page to print successfully. If the printer still reports that there is insufficient storage to process the page, the job is terminated and a message is produced indicating that the page and its associated resources are too complex.

Insufficient memory in the printer example:

A 30 page document is submitted. Each page of the document references several complex page segments.

1. InfoPrint Manager sends pages for the document to the printer.
 - Before each page is sent, InfoPrint Manager downloads page segments that are required by the page.
2. The printer reports an insufficient memory error to InfoPrint Manager (for page 23).
 - InfoPrint Manager deletes all the page segments (and any other resources) previously downloaded to the printer. All of the printer memory available for resources should now be free. InfoPrint Manager then attempts to load only the page segments required for page 23. Because unnecessary page segments have been removed from printer memory, all of the page segments for page 23 can be successfully downloaded into the printer. No messages are reported to the server and no message pages are printed.
3. All 30 pages of the job print successfully.

IPDS error recovery: Intervention required conditions

A printer might experience intervention required conditions that are not related to the data stream or complexity of the data. These conditions cause printing to stop. Some intervention required conditions are handled directly by some printers and are not reported back to InfoPrint Manager. In these cases, InfoPrint Manager continues to send data to the printer.

Example:

1. As soon as the paper jam occurs, printing stops and the destination (printer) object changes to red.
 - A message is sent to the operator:
 - 0420-466: The destination reported a paper jam; clear the jam.
2. The actual destination (printer) object's destination-state changes to "needs key operator."
 - InfoPrint Manager waits until the paper jam has been cleared.
3. The operator then clears the paper jam, according to the printer jam recovery procedure. Some damaged pages are usually discarded as part of this procedure.
4. Once the printer jam is cleared, the destination (printer) object is no longer red. Using station counters from the printer, InfoPrint Manager repositions to the correct page and continues printing the document.
5. At the end of the document, a message page is printed which contains these:
 - 0420-094: The following messages were generated for file /info/paperjam with Job ID 787. This file printed on the InfoPrint destination ip32, which is a 4332 destination.
 - 0420-467: A paper jam occurred in the destination while printing this job. Inspect the output to determine if it is complete and that all printed pages are acceptable.

IPDS error recovery: Unrecoverable problems

Unrecoverable problems cause the InfoPrint Manager software or printer software to stop functioning or prevent them from communicating with each other. Examples of unrecoverable errors include: server system crash, software core dump, printer abort, power failure, or severe network problems.

These errors prevent the InfoPrint Manager software from obtaining current station counter status information from the printer. In these cases, InfoPrint Manager cannot determine how many pages and which jobs printed since the last set of valid station counters were received. InfoPrint Manager considers a job complete only when all pages are reported by the printer as stacked. In most cases, some pages for one or more jobs will print between the time InfoPrint Manager last received a printer acknowledgment and the time the unrecoverable error occurs.

Those jobs, because they are considered incomplete, will normally start printing from the beginning when the problem is resolved and both the InfoPrint Manager software and the printer are operating and communicating again.

However, if the submitter or operator does not want the job to start printing from the beginning, there is a way to modify where printing starts for the documents in these jobs. The document object **page-select** attribute can be modified before the job is processed again. This attribute allows the submitter to specify a page range (first to last) for each document in a job. This way, the submitter or operator can control which pages are printed after the problem is resolved.

Depending on the type of error and the network configuration, some errors might not be reported to InfoPrint Manager immediately. In these cases, an operator can issue a **pdshutdown** command to the actual destination object. This command works without any attempts to communicate with the printer. InfoPrint Manager will checkpoint the job that was partially stacked at the printer and use the station counters from the last valid acknowledgment to determine which page of which job to checkpoint. A small **ack-interval** value will make it possible to checkpoint using a more recent set of station counters than would be available with a large **ack-interval** value. The job can be resumed later from that checkpoint.

Some unrecoverable errors are reported immediately to the InfoPrint Manager software and the actual destination object (printer) is disabled. When this occurs, the **pdshutdown** command cannot be issued and therefore no checkpoint can be taken. InfoPrint Manager does not perform automatic checkpointing.

Unrecoverable problem example:

1. The destination (printer) object becomes disabled and the icon changes to **black**.
2. The job object changes to the **pending** state.
3. Later, the printer power is restored.
4. The operator must enable the destination (printer) object.
5. Jobs start printing on the printer in the order they have been scheduled.

All 300 pages of the job that were printing during the power failure print again.

Appendix C. Supported formatting objects

Table 49 lists the XSL formatting objects (XSL-FO) and properties that XML Extender supports. For more information about XSL formatting objects and XSL style sheets, see <http://www.w3.org/TR/XSL/> and <http://www.w3.org/Style/XSL/>.

Attention:

- The XML transforms do not support XSL shorthand properties and XSL functions.
- For the common properties listed in the table, most of their properties are supported.

Table 49. Supported XSL formatting objects. The order of the formatting objects is based on the order listed in the XSL Standard on W3C.

| Formatting object | Category | Property |
|-------------------------------------|-------------------------------|---|
| root | declaration-pagination-layout | |
| page-sequence | declaration-pagination-layout | initial-page-number |
| | | master-reference |
| page-sequence-master | declaration-pagination-layout | master-name |
| single-page-master-reference | declaration-pagination-layout | master-reference |
| repeatable-page-master-reference | declaration-pagination-layout | master-reference |
| | | maximum-repeats |
| repeatable-page-master-alternatives | declaration-pagination-layout | maximum-repeats |
| layout-master-set | declaration-pagination-layout | |
| simple-page-master | declaration-pagination-layout | Common Margin Properties-Block |
| | | master-name |
| | | page-height |
| | | page-width |
| region-body | declaration-pagination-layout | Common Border, Padding, and Background Properties |
| | | Common Margin Properties-Block |
| | | clip |
| | | region-name |
| | | reference-orientation |
| region-before | declaration-pagination-layout | Common Border, Padding, and Background Properties |
| | | extent |
| | | precedence |
| | | region-name |
| | | reference-orientation |

Table 49. Supported XSL formatting objects (continued). The order of the formatting objects is based on the order listed in the XSL Standard on W3C.

| Formatting object | Category | Property |
|-------------------|-------------------------------|---|
| region-after | declaration-pagination-layout | Common Border, Padding, and Background Properties |
| | | extent |
| | | precedence |
| | | region-name |
| | | reference-orientation |
| region-start | declaration-pagination-layout | Common Border, Padding, and Background Properties |
| | | extent |
| | | region-name |
| | | reference-orientation |
| region-end | declaration-pagination-layout | Common Border, Padding, and Background Properties |
| | | extent |
| | | region-name |
| | | reference-orientation |
| flow | declaration-pagination-layout | flow-name |
| static-content | declaration-pagination-layout | flow-name |
| block | block | Common Border, Padding, and Background Properties |
| | | Common Font Properties |
| | | Common Margin Properties-Block |
| | | absolute-position |
| | | color |
| | | linefeed-treatment |
| | | line-stacking-strategy |
| | | text-align |
| | | visibility |
| | | text-indent |
| | | white-space-collapse |
| | | white-space-treatment |
| | | wrap-option |
| block-container | block | Common Border, Padding, and Background Properties |
| | | Common Margin Properties-Block |
| | | block-progression-dimension |
| | | height |
| | | inline-progression-dimension |
| | | reference-orientation |
| | | width |

Table 49. Supported XSL formatting objects (continued). The order of the formatting objects is based on the order listed in the XSL Standard on W3C.

| Formatting object | Category | Property |
|----------------------|----------|---|
| character | inline | Common Border, Padding, and Background Properties |
| | | Common Font Properties |
| | | Common Margin Properties–Inline |
| | | character |
| | | color |
| initial-property-set | inline | Common Border, Padding, and Background Properties |
| | | Common Font Properties |
| | | color |
| external-graphic | inline | Common Border, Padding, and Background Properties |
| | | Common Margin Properties–Inline |
| | | block-progression-dimension |
| | | content-height |
| | | content-width |
| | | inline-progression-dimension |
| | | src |
| | | text-align |
| inline | inline | Common Border, Padding, and Background Properties |
| | | Common Font Properties |
| | | Common Margin Properties–Inline |
| | | block-progression-dimension |
| | | color |
| | | height |
| | | inline-progression-dimension |
| | | width |
| | | wrap-option |
| inline-container | inline | Common Border, Padding, and Background Properties |
| | | Common Margin Properties–Inline |
| | | block-progression-dimension |
| | | height |
| | | inline-progression-dimension |
| | | reference-orientation |
| | | width |

Table 49. Supported XSL formatting objects (continued). The order of the formatting objects is based on the order listed in the XSL Standard on W3C.

| Formatting object | Category | Property |
|-------------------|----------|---|
| page-number | inline | Common Border, Padding, and Background Properties |
| | | Common Font Properties |
| | | Common Margin Properties–Inline |
| | | wrap-option |
| table-and-caption | table | Common Border, Padding, and Background Properties |
| | | Common Margin Properties–Block |
| | | caption-side |
| | | text-align |
| table | table | Common Border, Padding, and Background Properties |
| | | Common Margin Properties–Block |
| | | block-progression-dimension |
| | | inline-progression-dimension |
| | | height |
| | | table-layout |
| | | width |
| table-column | table | column-width |
| | | number-columns-spanned |
| table-caption | table | Common Border, Padding, and Background Properties |
| | | block-progression-dimension |
| | | height |
| | | inline-progression-dimension |
| | | width |
| table-header | table | Common Border, Padding, and Background Properties |
| table-footer | table | Common Border, Padding, and Background Properties |
| table-body | table | Common Border, Padding, and Background Properties |
| table-row | table | Common Border, Padding, and Background Properties |
| | | height |

Table 49. Supported XSL formatting objects (continued). The order of the formatting objects is based on the order listed in the XSL Standard on W3C.

| Formatting object | Category | Property |
|-------------------|----------|---|
| table-cell | table | Common Border, Padding, and Background Properties |
| | | block-progression-dimension |
| | | empty-cells |
| | | ends-row |
| | | height |
| | | inline-progression-dimension |
| | | number-columns-spanned |
| | | number-rows-spanned |
| | | starts-row |
| | | width |
| list-block | list | Common Border, Padding, and Background Properties |
| list-item | list | Common Border, Padding, and Background Properties |
| list-item-body | list | |
| list-item-label | list | |

Appendix D. Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, use software products successfully. The major accessibility features in the InfoPrint Manager for Windows let users:

- Use assistive technologies such as screen-readers and screen magnifier software.
- Operate specific or equivalent features using only the keyboard.
- Customize display attributes such as color, contrast, and font size.

Using assistive technologies

Assistive technology products, such as screen-readers, function with the user interfaces found in the InfoPrint Manager for Windows. Consult the assistive technology documentation for specific information when using it to access the InfoPrint Manager for Windows.

Keyboard navigation of the user interface

The InfoPrint Manager for Windows user interface complies with the accessibility guidelines for HTML. Users can use keyboard shortcuts or function keys (PF keys) to access the InfoPrint Manager for Windows user interface. For example, Alt+Shift+F2 lets you skip to the main content. see your browser documentation for keyboard shortcuts and default settings for the PF keys and for explanations about how to modify their functions.

Notices

This information was developed for products and services offered in the U.S.A.

InfoPrint Solutions Company may not offer the products, services, or features discussed in this document in other countries. Consult your local InfoPrint Solutions Company representative for information on the products and services currently available in your area. Any reference to an InfoPrint Solutions Company product, program, or service is not intended to state or imply that *only* that InfoPrint Solutions Company product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any InfoPrint Solutions Company intellectual property rights may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-InfoPrint Solutions Company product, program, or service.

References in this document to InfoPrint Solutions Company products, product features, programs or services do not imply that InfoPrint Solutions Company intends to make such products, product features, programs or services available in all countries in which InfoPrint Solutions Company operates or does business.

InfoPrint Solutions Company may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

InfoPrint Solutions Company, LLC
6300 Diagonal Hwy 002J
Boulder, CO 80301-9270
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the InfoPrint Solutions Company Intellectual Property Department in your country or send inquiries, in writing, to:

InfoPrint Solutions Company, LLC
6300 Diagonal Hwy 002J
Boulder, CO 80301-9270
U.S.A.

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INFOPRINT SOLUTIONS COMPANY PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. InfoPrint Solutions Company may make improvements and/or changes in the product(s) described in this publication at any time without notice.

Any references in this information to non-InfoPrint Solutions Company Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this InfoPrint Solutions Company product and use of those Web sites is at your own risk.

InfoPrint Solutions Company may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

InfoPrint Solutions Company, LLC
6300 Diagonal Hwy 002J
Boulder, CO 80301-9270
U.S.A.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by InfoPrint Solutions Company under terms of the InfoPrint Solutions Company Customer Agreement, InfoPrint Solutions Company International Program License Agreement or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurement may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-InfoPrint Solutions Company products was obtained from the suppliers of those products, their published announcements or other publicly available sources. InfoPrint Solutions Company has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-InfoPrint Solutions Company products. Questions on the capabilities of non-InfoPrint Solutions Company products should be addressed to the suppliers of those products.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

Trademarks

These terms are trademarks or registered trademarks of Ricoh Co., Ltd., in the United States, other countries, or both:

- Advanced Function Presentation
- Advanced Function Printing
- AFCCU
- AFP
- Bar Code Object Content Architecture

- BCOCA
- Intelligent Printer Data Stream
- IPDS
- InfoPrint
- Infoprint
- Mixed Object Document Content Architecture
- MO:DCA
- Ricoh

These terms are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both:

- AIX
- DFS
- HACMP
- IBM
- IP Printway
- MVS
- OS/2
- OS/390
- POWER
- Print Services Facility
- z/OS

Adobe, the Adobe logo, PostScript, and the PostScript logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Sun Microsystems, Inc. in the U.S. and other countries.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Other company, product, or service names may be trademarks or service marks of others.

Glossary

This glossary defines technical terms and abbreviations used in InfoPrint Manager.

Special Characters

.Guidefaults file

A file created by InfoPrint in the home directory of a person using the InfoPrint GUI. InfoPrint uses this file to save and reference information about the servers you are monitoring and the windows you are working in.

A

Access Control List (ACL)

In computer security, a collection of all access rights for one object.

ACL Access Control List.

acl editor

A command line interface that lets you view, add, update, and delete access authorization records in an ACL.

action In the InfoPrint GUI, an icon that represents an operation that you can perform on an InfoPrint object. You drag and drop the action onto an object to initiate the operation for that object. For example, using the **Enable** action to enable a disabled actual destination.

actual destination

In InfoPrint, an object that represents the output device that performs the printing or transmission function. See *email destination*, *fax destination*; see also *physical printer*, *printer device*; contrast with *logical destination*.

additive color system

A system that reproduces an image by mixing (adding) appropriate quantities of red, green, and blue light (the additive primary colors) to create all other colors of light, either direct or transmitted. When the additive primaries are superimposed on one another, they create white light. Contrast with *subtractive color system*.

administrator

In InfoPrint, the person who creates and manages one or more components of a

printing system, such as servers and actual destinations. By default, InfoPrint gives administrators authorization to perform some InfoPrint operations and to access certain information that is not available to the operators or job submitters.

Adobe® Acrobat

An Adobe software program that provides instant access to documents in their original format, independent of computer platform. With the Adobe Reader, you can view, navigate, print, and present any Portable Document Format (.pdf) file.

Adobe PageMaker

A desktop publishing program that produces PostScript documents.

Adobe PostScript Raster to Image Transform (RIP)

See *raster image processor (RIP)*.

ADSM/6000

Advanced Distributed Storage Manager.

Advanced Distributed Storage Manager (ADSM/6000)

A program that provides storage management for archived files.

Advanced Function Common Control Unit (AFCCU)

An IBM RISC-based control unit with code common to all printers that use the AFCCU.

Advanced Function Presentation (AFP)

A set of licensed programs, together with user applications, that use the all-points-addressable concept to print data on a wide variety of printers or to display data on a wide variety of display devices. AFP includes creating, formatting, archiving, retrieving, viewing, distributing, and printing information.

Advanced Function Presentation data stream (AFP data stream)

The printer data stream used for printing AFP data. The AFP data stream includes composed text, page segments, electronic

overlays, form definitions, and fonts downloaded from the operating system to the printer.

A presentation data stream that is processed in AFP environments. The AFP data stream includes MO:DCA-P-based data streams.

Advanced Interactive Executive (AIX)

An operating system used with RS/6000 computers. The AIX operating system is IBM's implementation of the UNIX operating system.

AFCCU

Advanced Function Common Control Unit.

AFP Advanced Function Presentation.

AFP data stream

Advanced Function Presentation data stream.

ainbe The printer input/output backend program used by the PSF DSS to send jobs to printer devices. Depending on the incoming data stream of the job, the PSF DSS might have transformed the data stream of the job before the backend program sending it to the printer device.

AIX Advanced Interactive Executive.

AIX-attached printer

A printer device, attached to an RS/6000 computer through the network or through a serial or parallel port that receives jobs from an AIX print queue.

In InfoPrint, a PSF physical printer that represents an AIX-attached printer device. See also *direct-attached printer*, *TCP/IP-attached printer*, *upload-TCP/IP-attached printer*.

AIX destination support system

In InfoPrint, the destination support system that communicates with the standard AIX print backend (**piobe**), or with certain variations of the **rembak** print backend, to print jobs.

AIX physical printer

In InfoPrint, the object representing a printer device that uses the AIX destination support system.

aliasing

In a digitized image, the creation of diagonal lines by combining short

horizontal and vertical line segments that approximate the path of the desired line.

all-points-addressability (APA)

The capability to address, reference, and position text, overlays, and images at any defined point of the printable area of the paper or display medium.

alphameric

Synonym for *alphanumeric*.

alphanumeric

Pertaining to a character set containing letters, digits, and other symbols such as punctuation marks. Synonymous with *alphameric*.

AMPV

Average monthly print volume.

analog

Pertaining to a continuous variable sampling of information between two points that achieves an even, smooth transition of photographic material.

analog color proof

An off-press color proof made from separation films.

anti-aliasing

The rendering of hard-edged objects so that they blend smoothly into the background. PhotoShop offers anti-aliasing when rasterizing an EPS file.

Removing the jagged "stairstep" quality in diagonal lines produced on a computer screen by aliasing. This removal is effected by creating less densely shaded fields parallel to the diagonal line.

APA All-points-addressability.

API Application Program Interface.

Application Program Interface (API)

The call interface between a client program and the procedures that implement the printing system, as defined by the specification. Clients use the API to access servers. (P)

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.

archiving

The transfer of digital information from an online system onto floppy disk, compact disc, or other media for offline storage. The original copy is deleted from the online system. See also *retrieval*.

array inkjet

An ordered collection of multiple print heads used in an inkjet printer.

ASCII American National Standard Code for Information Exchange. The standard code, using a coded character set consisting of 7-bit coded characters (8 bits including a parity check). The ASCII code is used for information exchange among data processing systems, data communications systems, and associated equipment. The ASCII character set includes control characters and graphic characters.

asynchronous

Pertaining to two or more processes that do not depend upon the occurrence of specific events, such as common timing signals. (T)

In InfoPrint, occurring without a regular or predictable time relationship to a specified action. Contrast with *synchronous*.

attachment type

Defines the method by which a printer device is attached to the AIX system from which it receives data. See *AIX-attached printer*, *direct-attached printer*, *TCP/IP-attached printer*, and *upload-TCP/IP-attached printer*.

attribute

A defined characteristic of an object, such as the number of copies required of a job, or the document formats accepted by an actual destination.

attribute name

A string that identifies an attribute. Typically, in InfoPrint attribute names consist of two or more words separated by hyphens.

attribute value

The element of an attribute that specifies the characteristics relating to the attribute.

authorization

In computer security, verification of the eligibility of a user to access an object.

authorized user

A person with the appropriate permissions to access an object or to issue a command.

automatic recovery

A function of printer logic that permits the printer to reprint a job if the job is misprinted or damaged or if a component has failed.

auxiliary sheet

In InfoPrint, an object that represents a particular sheet of paper, blank or otherwise, that can precede a job, separate documents in a job, or follow a job.

auxiliary-sheet selections

A particular combination of start, separator, and end sheets that print with jobs on a particular printer device.

B**backend**

In AIX, the program that is invoked by the **qdaemon** process to run a print or batch job. Synonymous with *backend program*.

backend program

Synonym for *backend*.

backlog

In InfoPrint, the amount of time calculated by InfoPrint that is required to print all of the jobs currently in a queue.

backspace

In InfoPrint, the action used to back up and reprint pages in a job.

bar code

A code representing characters by sets of parallel bars of varying thickness and separation that are read optically by transverse scanning.

An array of parallel rectangular bars and spaces that together represent data elements or characters in a particular symbology. The bars and spaces are arranged in a predetermined pattern following unambiguous rules defined by the symbology.

BCOCA

Bar Code Object Content Architecture™.

Bezier curves

A method of defining curves using anchor

points, control handles, and tangent lines. The PostScript path passes through anchor points. Its approach direction is along the tangent lines that are controlled by the control handles. Many personal computer programs use this drawing method. Type 1 PostScript fonts are defined using Bezier curves.

binding

The cover and materials that hold a book together. See *edition binding*, *perfect binding*, *spiral binding*, *wire-o binding*.

The process of applying the binding to a book.

In InfoPrint, assigning a job to an actual destination. See *early binding*, *late binding*.

bitmapped

Pertaining to an image formed by a rectangular grid of pixels. Each pixel is assigned a value to denote its color. One-bit images are black and white; 8-bit images have 256 colors (or grays); 24-bit images have full color. CMYK images have 32-bits per pixel to encode 256 levels in each of four channels. Bitmapped images are also called raster images.

bleed An extra amount of printed image that extends beyond the trim edge of the sheet. Bleed ensures that no white gap appears at the edge of the sheet.

boot To prepare a computer for operating by loading an operating system.

BSD Berkeley Software Distribution.

BSD destination support system

In InfoPrint, the destination support system that generates a print command string that the shell runs to print jobs.

BSD physical printer

In InfoPrint, the object representing a printer device that uses the BSD destination support system.

burn In platemaking, an exposure. Burn is named because of the extremely bright ultraviolet lamps used to transfer images from film to plate.

In photography, to lengthen the final exposure time to increase the final density of print.

C

cathode ray tube (CRT)

A vacuum tube in which a beam of electrons can be moved to draw lines or form characters or symbols on its luminescent (phosphor-coated) screen. CRTs are the heart of all modern computer display screens. Black and white displays have only one phosphor scanned by one electron beam, while color displays have RGB phosphors scanned by three beams.

CDE Common Desktop Environment.

child See *parent/child relationship*.

choke In color printing, an area whose dimensions have been reduced to avoid overlapping another color. Contrast with *spread*.

class Synonym for *object class*.

clean In InfoPrint, an action used to remove all the jobs from specified servers, actual destinations, or queues, or to remove all the jobs submitted to specified logical destinations.

CLI Command Line Interface.

client In InfoPrint, the component of the print system that assembles a print request and submits the request to a server. The client generates the local ID numbers for each job, submits the jobs to the servers, and keeps track of where each user's jobs have been submitted.

CMR Color Management Resource.

CMY Cyan, magenta, yellow.

CMYK
Cyan, magenta, yellow, black.

collator

In some printers a special-purpose hard drive disk array used to store RIPped files and later transfer them to the LED print heads for imaging.

color balance

The relative levels of cyan, magenta, and yellow channels in an image to produce accurate color rendition of an original image.

color correction

The adjustment of the color balance in an image to produce accurate color rendition

of an original image. Color correction is used for two- or three-spot-color jobs.

color key

A color proof similar to Cromalin, but typically not laminated and not necessarily accurate in color. Color keys are used to verify that breaks or color assignments and traps have been made accurately.

Color management resource

Color management resource (CMR) is an architected resource that is used to carry all of the color management information required to render a print file, document, group of pages or sheets, page, or data object with color fidelity.

Command Line Interface (CLI)

A type of user interface where commands are specified on the command line. Contrast with *Graphical User Interface*.

Common Desktop Environment (CDE)

A graphical user interface running on a UNIX operating system.

complex attribute

In InfoPrint, an attribute that can have multiple values with each value containing multiple components.

constant data

Data that does not change between copies of a document and that is merged with variable data to produce personalized documents. For example, a form letter (constant data) can be merged with a customer's name and address (variable data).

contextual help

A type of online help that provides specific information about each selectable object, menu choice, notebook tab, field, control, and pushbutton in a window.

control strip

A strip of information that can be attached to a print job and used to measure registration and density.

Cromalin

The Dupont color proofing system. Four layers (CMYK) of light-sensitive material are exposed through final halftone negative films, then laminated together on an opaque backing to produce a color- and trap-accurate final proof showing

actual halftone dot structure. Cromalin is sometimes called an analog proof.

crop

To remove unwanted areas of an image, usually indicated by crop marks on the original.

CRT

Cathode ray tube.

CTS

Cutter-trimmer-stacker.

cutter-trimmer-stacker (CTS)

A post-processing device attached to a printer device and used for paper handling.

cyan, magenta, yellow (CMY)

The subtractive primary colors.

cyan, magenta, yellow, black (CMYK)

The four basic colors used in offset printing, as opposed to the three basic colors of light: red, green, and blue. Magenta, yellow, and cyan are the subtractive primaries. Black is added to provide better density and to produce a true black.

D

daemon

A program that runs unattended to perform a standard service. Some daemons are triggered automatically to perform their tasks; others operate periodically. Daemon processes generally provide a service that must be available at all times to more than one task or user, such as sending data to a printer.

DAT

Digital audio tape.

data stream

All information (data and control commands) sent over a data link.

A continuous stream of data that has a defined format.

In InfoPrint, pertaining to the incoming format of the job and the output format required by the printer device. InfoPrint transforms the incoming format into the output format, as required. See also *document format*.

DB2*/6000

DataBase 2/6000.

deadline

In InfoPrint, a queuing technique where the next job assigned to the first position

in the queue is the one whose deadline is closest. Contrast with *FIFO* (*first-in-first-out*), *job-priority*, *longest-job-first*, and *shortest-job-first*.

default document

In InfoPrint, an object that represents default attribute values for a document in a job. Synonymous with *initial value document*.

default job

In InfoPrint, an object that represents default attribute values for a job. Synonymous with *initial value job*.

default object

In InfoPrint, a general term that refers either to a *default document* or a *default job*. Synonymous with *initial value object*.

default value

A value stored in the system that is used when no other value is specified.

delete In InfoPrint, an action used to delete default objects, jobs, logical destinations, actual destinations, or queues from the server.

desktop publishing

Performing print-related activities on a personal computer, including but not limited to layout, design, photo manipulation, creating fonts, editing text, color separation, scanning, and animation.

destination

See *actual destination*, *logical destination*.

destination support system (DSS)

In InfoPrint, the programs that an actual destination uses to communicate with the output device. Synonymous with *device support system*. See *AIX destination support system*, *BSD destination support system*, *email destination support system*, *Generalized Fax destination support system*, and *PSF destination support system*.

device An individual piece of equipment (hardware) that attaches to a computer, such as a printer device.

device address

The identification of an input or output device by its channel and unit number.

device driver

A file that communicates with a specific device such as a printer, disk drive, or

display. An application that sends output to a device controls the actions of the device through the device driver. See *printer driver*.

device support system (DSS)

Synonym for *destination support system*.

DFS™ Distributed File Service.

digital Pertaining to data represented by digits, sometimes with special characters and the space character.

digital audio tape (DAT)

A high-capacity, low-cost bulk storage system used for archiving, copying (for backup purposes), and transferring large files. Typical DAT units store 1.3 GB on inexpensive cassette tapes.

digital color proof

An off-press color proof made from a color printer attached to a computer.

digital printing

A filmless and plateless printing process in which digital data for each page is transferred directly to a light-sensitive drum and then to paper for a final image.

direct-attached printer

A printer device, attached to an RS/6000 computer through the network or through a serial or parallel port.

In InfoPrint, a PSF physical printer that represents a direct-attached printer device. See also *AIX-attached printer*, *TCP/IP-attached printer*, and *upload-TCP/IP-attached printer*.

disable

In InfoPrint, an action used to stop the acceptance of jobs on destinations, queues, or servers, or to stop writing information to logs.

distributed print system

A computer system with the ability to interchange print data and controls among different computing environments with the intent of printing the data on a different system from the one where the print request was generated. For example, in host-to-LAN distributed printing, data that is located on the host is printed on printers attached to a local area network.

dithering

A technique of filling the gap between

two pixels with another pixel having an average value of the two to minimize the difference or to add detail to smooth the result.

document

In InfoPrint, an object representing a grouping of data in a job. A job can contain one or more documents. The documents in a job can differ from each other in some ways. For example, they can contain different data and can have different document formats. A document in a job can contain printable data or a resource that is not printable by itself. See *file-reference document*, *printable document*, and *resource document*.

document element

A portion of a document at least a single page in size.

document format

In InfoPrint, a document format describes the type of the data and control characters in the document, such as line data or PostScript. The format of the data determines which printer devices are capable of printing the document and whether InfoPrint must transform the format.

document identifier

A string that identifies a document in a job. It consists of a job ID followed by a period (.) and a document sequence number. For example, 12.2. Document sequence numbers are integers starting at 1.

Document Printing Application (DPA)

An ISO/IEC 10175 standard that addresses those aspects of document processing that enable users in a distributed open systems environment to send electronic documents to shared, possibly geographically-dispersed printers. InfoPrint supports the DPA standard.

document transfer method

In InfoPrint, the transfer method describes how documents are transferred to, or acquired by, servers. See *pipe-pull* and *with-request*.

document type

In InfoPrint, the document type describes the kind of data in the document. A

printable document can only contain printable data. A *resource document* can only contain data such as fonts or form definitions that are not printable. A *file reference document* can only contain names of files entered on separate lines.

dot The individual elements of a halftone.

dot gain

An increase in the size of a halftone dot during printing, caused by ink spreading. Generally, this value is known precisely, and the scanning and filming production process is calibrated to compensate for it. The Cromalin proofing system simulates this effect.

dots per inch (dpi)

A measure of data density per unit distance. Typical values for desktop publishing range from 200 to 300 dpi.

DPA Document Printing Application.

DPF Distributed Print Facility.

dpi Dots per inch.

drag and drop

In graphical user interfaces, a procedure by which you perform actions and tasks. Using the mouse, you drag (move) an action or object icon to a new position where you want the action or task to occur.

DSS Destination support system.

dummy

A rough paste-up or hand-drawn representation of the anticipated finished product. A dummy is used for basic design and pagination.

duplex printing

Printing on both sides of the paper. Contrast with *simplex printing* (1).

Printing on both sides of the paper, placing output images on the media in a head-to-head format, so that the top of one image is at the same edge as the top of the next image. Contrast with *tumble duplex printing*; see also *simplex printing* (2).

E

early binding

In InfoPrint, assigning a job to an actual destination as soon as it is accepted. Early

binding permits InfoPrint to estimate the time when the job will be completed. Contrast with *late binding*.

edition binding

A type of book binding in which printed sheets are folded into 16- or 32-page signatures. Four-page endleaves are pasted on the outside of the first and last signature. The signatures are then collated by machine and sewn together using special sewing machines. Contrast with *perfect binding*, *spiral binding*, and *wire-o binding*.

electronic document

A document stored in a computer instead of printed on paper.

electronic mail

Correspondence in the form of messages sent between workstations over a network. Synonymous with *email*.

electrophotographic

Pertaining to a type of printer technology that creates an image on paper by uniformly charging the photoconductor, creating an electrostatic image on the photoconductor, attracting negatively charged toner to the discharged areas of the photoconductor, and transferring and fusing the toner to paper.

em

In composition, a unit of measurement exactly as wide and as high as the point size of the font being set. The name is derived from the fact that the letter M in early typefaces was usually cast on a square body.

email Electronic mail.

email destination

In InfoPrint, an actual destination representing an electronic mailing system.

email destination support system

In InfoPrint, the destination support system that supports email destinations.

embellishments

Variable data added to all copies of assembled pages to make the unit appear like a whole; for example, headers, footers, a table of contents, and chapter separations.

en In composition, exactly one-half an em.

enable

In InfoPrint, the action that makes a destination, queue, or server able to accept jobs, or a log able to accept information.

end sheet

The sheet of paper, blank or otherwise, that can follow a job. See also *auxiliary sheet*.

Enhanced X-Windows

A tool designed to permit multiple application processes to operate in multiple windows displayed on a virtual terminal. See *X-Windows*.

environment variable

Any one of a number of variables that describe the way an operating system runs and the devices it recognizes.

error log

A data set or file in a product or system where error information is stored for later access.

estimate

The professional cost analysis made by a print shop in response to a customer's request for a price quotation on a print job.

event In InfoPrint, an occurrence in the printing system during an operation; for example, the completion of a command.

event log

In InfoPrint, a collection of messages about events that have occurred.

event notification

The notification that is sent by InfoPrint for an event.

F

fax destination

In InfoPrint, an actual destination representing a fax device.

FIFO (first-in-first-out)

In InfoPrint, a queuing technique where the next job assigned to the first position in the queue is the job that has been in the queue for the longest time. InfoPrint processes jobs in the order in which they are received. Contrast with *deadline*, *job-priority*, *longest-job-first*, and *shortest-job-first*.

file-reference document

In InfoPrint, a file containing the names of other files, each entered on a separate line. Job submitters can specify this file for printing when they specify a document type of **file-reference**; InfoPrint prints each file listed in the reference document.

File Transfer Protocol (FTP)

In TCP/IP, the application protocol that makes it possible to transfer data to and from host computers and to use foreign hosts indirectly.

finisher

A hardware device attached to a printer that performs such operations as folding or stapling the printed pages.

finishing

In a print shop, the final operations on a printed product, such as stapling, trimming, drilling, folding, embossing, varnishing, gluing, shrink wrapping, perforating, laminating, collating, and so on.

flag

A modifier of a command that specifies the action of the command. A dash usually precedes a flag. Synonymous with *option*. See also *keyword*.

FOCA Font object content architecture.

folder In the InfoPrint GUI, an object that represents a container for a collection of similar objects. For example, the Retained Jobs folder contains retained jobs.

font A family of characters of a given size and style; for example, 9-point Helvetica.

One size and one typeface in a particular type family, including letters, numerals, punctuation marks, special characters, and ligatures.

A paired character set and code page that can be used together for printing a string of text characters. A double-byte font can consist of multiple pairs of character sets and code pages.

form definition

A resource object used by InfoPrint that defines the characteristics of the form or printed media, which include: overlays to be used, the paper source (for cut-sheet printers), duplex printing, text

suppression, and the position of composed-text data on the form.

forward space

In InfoPrint, the action used to move ahead and skip the printing of a specified number of pages in a job.

FPO Low-quality (sometimes photographic) images placed in a dummy to represent final images. Desktop publishing software produces images as display-screen resolution FPOs.

front panel

In the CDE, a workspace area containing controls that represent various tasks you can perform and workspace switches.

FTP File Transfer Protocol.

G

GCR Gray component replacement.

Generalized Fax destination support system

In InfoPrint, the destination support system that supports generalized fax destinations.

GIF Graphics Interchange Format.

global change

In the InfoPrint GUI, an action used to make changes to one or more attributes of several objects at once. You can also perform the same action on several objects of the same object class at the same time; for example, disabling two or more actual destinations at the same time.

global character

A character or set of characters used to specify an unknown number or set of characters in a search string. In InfoPrint, a global character is represented by an asterisk (*).

global ID

Global job identifier.

global job identifier

An unambiguous job identifier. In InfoPrint, it is represented as the name of the server managing the job followed by a colon (:) and a generated integer. This ID uniquely identifies the job in the InfoPrint server.

glyph An image, usually of a character, in a font.

GOCA

Graphics object content architecture.

graphic character

A visual representation of a character, other than a control character, that is normally produced by writing, printing, or displaying.

Graphical User Interface (GUI)

A type of user interface that takes advantage of a high-resolution monitor and includes a combination of graphics to implement an object-action paradigm, the use of pointing devices, menu bars, overlapping windows, and icons. Contrast with *Command Line Interface*.

Graphics Interchange Format (GIF)

A compressed graphics format widely used on the Internet.

gray component replacement (GCR)

Synonym for *under color removal (UCR)*.

gray scale

A strip of standard gray tones, ranging from white to black, placed at the side of the original copy during photography to measure the tonal range and contrast obtained.

GUI Graphical User Interface.

gutter The blank area or inner margin from the printing area to the binding.

H

halftone

A printing method that simulates continuous-tone shading using dots of varying sizes laid out on a rectangular grid. Larger dots simulate darker tones and smaller dots simulate lighter tones. Typical grid spacings are 85 lines per inch (lpi) (newspaper), 133 lpi (low end), 150 lpi (midrange), and 175+ lpi (high quality).

help In the InfoPrint GUI, an action used to display the online help for a specific template, object, action, button, control, or area in an application window.

The name of a button used to access the online help.

hold An indication determined by the **job-hold**

attribute that is used to keep a job in the queue and prevent InfoPrint from scheduling it.

hostname

The name given to an AIX system.

hot folder

A workstation directory where users copy jobs to submit them to print.

hypertext

A way of presenting information online with connections between one piece of information and another. These connections are called hypertext links. See also *hypertext link*.

hypertext link

A connection between one piece of information and another. Selecting a link displays the target piece of information.

I

icon A graphic symbol displayed on a screen that a user can click to invoke a function or software application.

image Toned and untoned pels arranged in a pattern.

image data

Rectangular arrays of raster information that define an image.

imagesetter

A high resolution (1270–3600+ dpi) printer that uses an Argon (green) laser to write to film using digital input. Imagesetting is the step before Cromalin proofing and platemaking.

imposition

The process of arranging pages on a press sheet to ensure the correct order during final cutting, folding, and binding. Electronic imposition builds press sheets automatically during the RIP and outputs film formatted for immediate use in platemaking.

InfoPrint

A solution of software and hardware products that can supplement or replace the offset presses and copiers in print shops with high-quality, non-impact, black and white or process color printers. InfoPrint takes documents from creation to the published, kitted, and shipped product.

In InfoPrint software publications, InfoPrint Manager for AIX or any of its components.

InfoPrint Manager for AIX

The software component of InfoPrint. InfoPrint Manager for AIX handles the scheduling, archiving, retrieving, and assembly of a print job and its related resource files. It also tracks the finishing and packaging of the printed product.

InfoPrint Manager for AIX is based on Palladium technology developed at MIT/Project Athena. It conforms to the ISO DPA and POSIX standards.

InfoPrint Network

The local area network running TCP/IP protocol that InfoPrint uses to communicate among servers, clients, and output devices.

InfoPrint Select

The component of InfoPrint Manager for AIX that lets you submit jobs from an OS/2[®] or Windows workstation.

InfoPrint Submit Express

The component of InfoPrint Manager that lets you submit jobs with a job ticket from a Windows or Macintosh workstation.

InfoPrint 20

A black and white, large-format, cut-sheet, workgroup laser printer with optional duplexing and 600-dpi resolution.

InfoPrint 60

A duplex, black and white, cut-sheet printer with 600-dpi resolution.

InfoPrint 62

A non-impact, continuous-forms printer that runs at a maximum of 62 impressions-per-minute (depending on forms size), and is factory set to run at either 240 or 300 dpi on a maximum paper size of 370.8 mm (14.6 in.).

InfoPrint 4000

A duplex, black and white, continuous-forms printer with 600-dpi resolution.

initial value document

Synonym for *default document*.

initial value job

Synonym for *default job*.

initial value object

Synonym for *default object*.

initially settable attribute

An attribute whose value can be established when an object is created but cannot be subsequently set or modified. See also *resettable attribute*; contrast with *non-settable attribute*.

input focus

The area of a window where user interaction is possible from either the keyboard or the mouse.

input tray

For a printer device, the container that holds the medium upon which the printer prints its output.

Intelligent Printer Data Stream (IPDS)

An all-points-addressable data stream that enables users to position text, images, and graphics at any defined point on a printed page.

Information that the host sends to IPDS printers. This information generally contains basic formatting, error recovery, and character data and enables the printers to make decisions.

An architected host-to-printer data stream that contains both data (text, image, graphics, and bar codes) and controls defining how the data is to be presented. IPDS provides a device-independent interface for controlling and managing all-points-addressable (APA) printers.

International Organization for Standardization (ISO)

An organization of national standards bodies from various countries established to promote development standards to facilitate international exchange of goods and services, and develop cooperation in intellectual, scientific, technological, and economic activity.

Internet

A wide area network connecting thousands of disparate networks in industry, education, government, and research. The Internet network uses TCP/IP as the protocol for sending information.

Internet Protocol

The set of rules that determines how to

route data from its source to its destination in an internet environment.

intervening jobs

In InfoPrint, the number of jobs in a queue that are scheduled to print before the job in question.

IOCA Image object content architecture.

IP address

The Internet Protocol address of the server in a dotted decimal format where each node is an integer. (For example, 9.99.9.143).

IPDS Intelligent Printer Data Stream.

ISO International Organization for Standardization.

J

job In InfoPrint, an object that represents a request to print or send one or more documents together in a single session. A job includes the data to be printed or sent and resources such as fonts, images, and overlays. Depending on how it was submitted, it can also include a job ticket. Synonymous with *job bundle* and *print job*.

job bundle

Synonym for *job*.

job data

The page descriptions, merge data, and embellishments that compose a document in a job, either directly or by reference.

job ID

A local or a global identifier that identifies a job to a job submitter, administrator, operator, or InfoPrint. See *local job identifier*, *global job identifier*.

job-priority

In InfoPrint, a queuing technique where the next job assigned to the first position in the queue is the one with the highest priority. Contrast with *deadline*, *FIFO* (*first-in-first-out*), *longest-job-first*, and *shortest-job-first*.

job submitter

In InfoPrint, the person who submits jobs for printing. Often, this person is an application programmer who maintains applications that generate data to be printed.

job ticket

The customer's hardcopy or electronic instructions listing all the variables describing a print job, either directly or by reference. The print shop can add specifications to the job ticket and can print the job ticket.

Joint Photographic Experts Group (JPEG)

A compressed graphics format widely used on the Internet.

JPEG Joint Photographic Experts Group.

K

kerning

In typesetting, adjusting the relative spacing of two characters to improve their appearance and readability. Kerning pairs are specific sets of characters with built-in relative spacing. Some typefaces have as many as 100 kerning pairs.

keyword

A name or symbol that identifies a parameter.

Part of a command operand that consists of a specific character string, such as **DSNAME=**.

kitting

In a print shop, packaging the completed published work with attendant binders, tabs, diskettes, and other equipment or information, before shipping the finished product.

L

LAN Local Area Network.

laser (light amplification by stimulated emission of radiation)

In InfoPrint printers, a device that emits a beam of coherent light that forms the image on the photoconductor that is subsequently transferred to the paper.

late binding

In InfoPrint, waiting to assign a job to an actual destination until it is about to be processed. Late binding permits InfoPrint to route a job to the first suitable actual destination that becomes available. Contrast with *early binding*.

LED Light-emitting diode.

light-emitting diode (LED)

The imaging device element for electrophotographic print units.

lines per inch (lpi)

A measure of the density of the grid used to space halftone dots. Typical grid spacings are 85 lpi (newspaper), 133 lpi (low end), 150 lpi (midrange), and 175+ lpi (high quality).

Local Area Network (LAN)

A computer network at one location that consisting of devices connected to one another and communicating. This network can also be connected to a larger network.

local ID

Local job identifier.

local job identifier

In InfoPrint, a job identifier automatically generated by the server, identifying the job to the person who submitted it. InfoPrint maps a local job ID to a global job ID.

locale The human language and character set of information presented to a user.

In InfoPrint, the language InfoPrint uses when sending notification and error messages or displaying the InfoPrint graphical user interfaces.

log A collection of messages or message segments added to a file for accounting or data collection purposes.

To record messages in a file.

logical destination

In InfoPrint, an object to which users submit their jobs. The logical destination routes jobs to one or more actual destinations representing output devices such as printers, electronic mail systems, or fax machines. See also *logical printer*; contrast with *actual destination*.

logical printer

In InfoPrint, a type of logical destination. The logical printer routes jobs to one or more physical printers representing printing devices.

logical unit (LU)

A type of network accessible unit that

enables end users to gain access to network resources and communicate with each other.

logical unit (LU) 6.2

A type of logical unit that supports general communication between programs in a distributed processing environment. LU 6.2 is characterized by (a) a peer relationship between session partners, (b) efficient utilization of a session for multiple transactions, (c) comprehensive end-to-end error processing, and (d) a generic application program interface (API) consisting of structured verbs that are mapped into a product implementation.

longest-job-first

In InfoPrint, a queuing technique where the next job assigned to the first position in the queue is the longest job in the queue. Contrast with *deadline*, *FIFO (first-in-first-out)*, *job-priority*, and *shortest-job-first*.

lpi Lines per inch.

LU Logical unit.

M**magnetic ink character recognition (MICR)**

Identification of characters printed with ink that contains particles of magnetic material.

mainframe processor

A functional unit that interprets and executes instructions in a large computer to which other computers are connected so that they can share the facilities the mainframe provides.

makeready

All the setup work involved in preparing a press for a print run.

manage

In the InfoPrint GUI, the action used to put an object into a mode where its icon reflects changes of status.

mechanical

A camera-ready layout. The mechanical can consist of multiple sheets or overlays for each spot or process color used. Final images, if not stripped in later, should be at final size, cropped and screened to the correct line frequency.

medium

In InfoPrint, an object representing the physical material upon which a job is printed.

merge data

Data that is unique to each copy of a document and that customizes the document; for example, serial numbers or mailing information. Merge data is typically a small percentage of the total data in the document.

message catalog

A file of all the possible messages that can display during the processing of an application.

MICR Magnetic ink character recognition.

Mixed Object Document Content Architecture (MO:DCA)

An architected, device-independent data stream for interchanging documents.

MO:DCA-P

Mixed Object Document Content Architecture Presentation.

modify

In InfoPrint, an action used to modify the values of attributes in the object attributes notebook.

moire Undesirable interference patterns caused by two overprinting halftone screens with incorrect halftone dot angles.

monospaced

In typesetting, pertaining to a typeface in which all the characters have equal widths. Monospaced typefaces are useful for tabulating figures.

Multiple Virtual Storage (MVS)

An operating system developed by IBM. The design of MVS incorporates an addressing architecture that provides a unique address space to each job in the system.

MVS Multiple Virtual Storage.

N

N_UP Pertaining to the number of forms placed together in a layout. Typical layouts are 2_UP, 4_UP, 8_UP, 16_UP, and so on. N_UP printing is done to use the maximum area of the print sheet.

namespace

A global name repository available to all utilities and API procedures. The namespace contains mappings of object names to other related objects. For example, the namespace provides the mapping of a logical destination to the server in which it is located.

Network File System (NFS)

A protocol developed by Sun Microsystems that uses Internet Protocol to allow a set of cooperating computers to access each other's file systems as if they were local.

newline options

The different ways in which the printer determines how lines are delimited in a document data stream.

NFS Network File System.

non-process-runout (NPRO)

A printer function that moves the last printed sheet to the stacker of the printer device.

non-settable attribute

An attribute that is neither initially settable nor resettable. The values for these attributes are controlled by InfoPrint. Contrast with *initially settable attribute* and *resettable attribute*.

notification

The act of reporting the occurrence of events.

In InfoPrint, notification of events appears as messages in event logs or messages sent to administrators, operators, and job submitters. In the InfoPrint GUI, notification of events also appears as changes to the appearance of icons.

notification-profile

In InfoPrint, an attribute associated with an object that contains information designating the people to whom InfoPrint sends notification about events for that object, which event information it sends, and how it sends the information.

NPRO Non-process-runout.

O

object A collection of attributes that represent a physical or logical entity in the print system. For example, a specific printer

device is represented by an actual destination (physical printer) object. An object is identified by its object name. Objects are grouped into classes. See also *object class*.

object class

A group of objects that share a common definition and therefore share common properties, operations, and behavior as defined by their attributes. For example, all InfoPrint queue objects are in the same object class and each queue has the same set of queue attributes. However, the values for those attributes can differ for each queue in the queue object class.

Object Identifier (OID)

In architecture, a notation that assigns a globally unambiguous identifier to an object or a document component. The notation is defined in international standard ISO.IEC 8824(E).

object name

The alphanumeric term that identifies an object.

object state

The state of an object indicates its availability and readiness for performing its functions. An object can be in one of a number of states such as ready, busy, or unknown.

OCR Optical character recognition.

octet A byte that consists of eight binary digits (bits).

offset stacking

In certain printer devices, a function that allows the printer to offset the printed output pages for easy separation of the jobs.

OID Object Identifier.

open destinations window

In the InfoPrint GUI, the action used to open a new application window displaying the logical and actual destinations associated with a queue.

Open Prepress Interface (OPI)

An industry standard for replacing low-resolution images in review documents with high-resolution images needed for high-quality final output.

Open Software Foundation (OSF)

A nonprofit research and development organization created by a consortium of companies that work together to develop software in the open systems market.

OpenType font (OTF)

An extension of the TrueType font format that adds:

- Support for PostScript outlines
- Better support for international character sets
- Broader support for advanced typographic control

open window

In the InfoPrint GUI, the action used to open a new application window representing one or more objects displayed in the currently open application window.

operation

An action performed on one or more data items.

operator

In InfoPrint, the person responsible for printer devices. Also, this person performs a subset of tasks for InfoPrint queues and actual destinations and performs some job-related tasks.

OPI Open Prepress Interface.

optical character recognition (OCR)

Conversion of scanned text to editable ASCII characters.

option A modifier of a command that specifies the action of the command. A dash usually precedes an option. Synonymous with *flag*. See also *keyword*.

orphan logical destination

In the InfoPrint GUI, an object that represents a logical destination that is not associated with an existing queue.

orphan logical printer

In the InfoPrint GUI, an object that represents a logical printer that is not associated with an existing queue.

OSF Open Software Foundation.

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.

OTF OpenType font.

P

PAC Privilege Attribute Certificate.

page definition

A resource that contains the formatting controls for line data.

In InfoPrint, a resource that defines the rules of transforming line data into composed pages and text controls.

page segment

A resource that contains composed text and images, which are prepared before formatting and included during printing.

Palladium

A distributed print system developed at MIT/Project Athena with participation from Digital Equipment Corporation (DEC), International Business Machines (IBM), and Hewlett-Packard (HP). It is a reference implementation for the OSI Document Printing Architecture (DPA) standard, ISO/IEC 10175.

pane In the Work Area of the InfoPrint Manager Administration GUI, an area containing a group of objects of a specific type, such as an actual destinations pane.

parent/child relationship

In InfoPrint, servers, queues, and destinations are related to one another in a parent/child relationship. For example, a server is the parent of all the queues that reside in that server, and these queues are its children.

pass through

In InfoPrint, referring to options submitted with a job that are used by the device driver, but not InfoPrint. InfoPrint does not process or validate this information; it passes it along to the device driver. See *printer driver*.

path The route used to locate files; the storage location of a file. A fully qualified path lists the drive identifier (if any), directory name, subdirectory name (if any), and file name with the associated extension.

pause In InfoPrint, the action used to

temporarily halt the printing or transmission of jobs on actual destinations or the distribution of jobs from servers or queues.

pdcreate

In InfoPrint, the command used to create a new object and set its attributes to specified values.

PDF Portable Document Format.

Printer description file.

pdmsg

In InfoPrint, a utility used to display information about a message.

pdpr In InfoPrint, the command used to create and submit a job, consisting of one or more documents, to a server for printing or transmission.

perfect binding

A type of book binding in which the pages are held together with flexible adhesive. Contrast with *edition binding*, *spiral binding*, and *wire-o binding*.

permissions

In AIX, codes that determine who can access a file and what operations they can perform on the file.

physical printer

In InfoPrint, a type of actual destination that represents a printer device. See also *printer device*.

piobe The standard printer input/output backend program used by AIX for printing. See also *ainbe*.

pipe-pull

In InfoPrint, a document transfer method where InfoPrint saves the documents in a file and transfers the address of the file to the server. InfoPrint transfers the file to the server upon the request from the server. This is an efficient transfer method for large jobs and is the default transfer method at job submission. Contrast with *with-request*.

plex A document or actual destination attribute used to define the placement of output images on the page. See the plex values *simplex* and *tumble*.

Portable Document Format (PDF)

An Adobe PostScript data format that can be viewed or printed.

Portable Operating System Interface for Computer Environments (POSIX)

An Institute of Electrical and Electronics Engineers (IEEE) standard for computer operating systems.

POSIX

Portable Operating System Interface for Computer Environments.

PostScript

Adobe's page description language. PostScript has become a standard for graphic design and layout software. PostScript files can contain both vector and raster data. Fonts are described using PostScript coding. Many desktop publishing systems produce PostScript data as their output data stream.

PostScript printer description (PPD)

A file that contains options for printing PostScript data on various printer devices.

PPD PostScript printer description.

preflight

To assess all resources for a job before the actual print run.

prepress

Work done in the print shop before printing a job, such as preparing data and art, page imposition, color retouching, electronic editing, and page layout.

print database

The set of files on disk that provide a permanent repository for the attributes of all print objects, such as logical destinations, queues, and actual destinations.

print job

Synonym for *job*.

Print Quality Enhancement (PQE)

A printer facility that provides edge smoothing along diagonal lines, fine fidelity protection, and independent boldness control.

Print Services Facility (PSF)

Any of several programs, including PSF for AIX, PSF/MVS, PSF/VM, and PSF/VSE, that produce printer commands from the data sent to them.

print system

A group of one or more print servers and one or more printing devices, which

might or might not be located in the same geographical area. The components of a print system are assumed to be interconnected in some manner, providing at least one network interface to print clients, and acting synergistically to supply the defined document print service. (D)

printable document

In InfoPrint, an object that represents text or data to be printed by a job. Contrast with *resource document*.

printer description file (PDF)

A file that contains options for printing PostScript data on a specific printer device.

printer device

The physical output device that performs the printing function. See also *physical printer*.

printer driver

A file that describes the physical characteristics of a printer or other peripheral device. This file is used to convert graphics and text into device-specific data at the time of printing or plotting. Synonymous with *device driver*.

priority

In InfoPrint, a number assigned to a job that determines its precedence in being printed. Jobs with higher priority numbers are handled before jobs with lower priority numbers.

process color

Color made up of CMYK links simulating a specified color. This is the traditional method of reproducing continuous tone color images (color separations). Because of the nature of color inks, certain inks do not reproduce well.

processor

In a computer, a functional unit that interprets and executes instructions. A processor consists of at least an instruction control unit and an arithmetic and logic unit. (T)

promote

In InfoPrint, the action used to move a job to the beginning of the queue so that it will print on the next available printer that can handle that job.

protocol

A set of semantic and syntactic rules that determines the behavior of functional units in achieving communication.

PSF Print Services Facility.

PSF destination support system

In InfoPrint, the destination support system that communicates with PSF for AIX to print jobs.

PSF physical printer

In InfoPrint, the object representing a printer device that uses the PSF destination support system.

Q**QuarkXpress**

A desktop publishing system produced by Quark, Incorporated.

queue In InfoPrint, an object that manages a collection of jobs that are waiting to print. A queue receives jobs from one or more logical destinations and sends jobs to one or more actual destinations.

A line or list formed by items waiting for processing.

R

raster A pattern of dots defined at varying data depths. Black and white images are one-bit (on/off); grayscale images are 8-bit (256 levels); RGB images are 24-bit; CMYK images are 32-bit.

raster image processor (RIP)

A processor in which a PostScript data stream is converted into dot patterns that are transferred to the final print medium. InfoPrint uses an Adobe RIP to convert PostScript to IPDS for such printers as the InfoPrint 4000 and InfoPrint 60.

rc.pd In InfoPrint, a utility used to start the InfoPrint servers listed in the `/etc/pd.servers` file.

read-only

In InfoPrint, describes an attribute value that cannot be set by the user but can change based on other activity.

ready A state in which an object is ready and able to perform tasks.

An available resource, such as a value of the **media-ready** attribute. Contrast with *supported*.

red, green, blue (RGB)

The colors of CRT display phosphors. RGB images are for screen display only. They must be converted to CMYK images before printing.

registration

The accuracy of printing on paper relative to the edges of the paper.

The accuracy of printing a single color (cyan, magenta, or yellow) relative to black.

The accuracy of printing on one side of a page relative to printing on the reverse side of the page.

reprographics

The process of copying or duplicating documents or information.

requested

In InfoPrint, pertaining to the specific values of attributes requested by a job when it is submitted. The requested attribute values of a job are validated against supported attribute values for an actual destination to determine if the printer can handle that job. Contrast with *supported*.

resettable attribute

An attribute whose value can be set or modified after an object has been created, assuming the object is in an appropriate state to be modified. See also *initially settable attribute*; contrast with *non-settable attribute*.

resource

In AFP, a file containing a collection of printing instructions used when printing a job. Resources include fonts, overlays, form definitions, page definitions, and page segments.

resource context

In InfoPrint, an object that contains directory path information that helps the print system locate resources needed for printing a job. The resources include fonts, overlays, form definitions, page definitions, and page segments.

resource document

In InfoPrint, an object that represents a

resource, such as graphics or fonts, used by a job to print a printable document. Contrast with *printable document*.

resubmit
In InfoPrint, an action used to reroute pending or retained jobs to a different logical destination than the one through which the job was originally submitted.

resume
In InfoPrint, the action used to resume the printing of paused jobs or resume the distribution of jobs from paused servers or queues.

retained job
In InfoPrint, an object that represents a job that is being stored in the print system for a specified amount of time, normally after the completion of printing the job. A retained job does not reside in a queue.

retention
The process of storing data after completion of a process for a certain length of time.

retrieval
The process of bringing digital archived data out of storage and into online memory for reuse. See also *archiving*.

RGB Red, green, blue.

RIP Raster image processor.
To convert data to dot patterns using a raster image processor.

root user
In the AIX environment, the system user with the most authority who can log in and execute restricted commands, shut down the system, and edit or delete protected files. Synonymous with *superuser*.

RPC Remote Procedure Call.

RS/6000
A family of workstations and servers based on IBM's POWER[®] architecture. They are primarily designed for running multi-user numerical computing applications that use the AIX operating system.

S

scanner
A device that converts hardcopy source data into digital format (halftone dots) to avoid retyping the data.

scheduler
In InfoPrint, the scheduling method that the queue uses when assigning a job to an actual destination.

separator sheet
The sheet of paper, blank or otherwise, that separates documents in a job. See also *auxiliary sheet*.

server In InfoPrint, the object that accepts configuration, management, and printing requests, performs the requested operations, and sends responses back as a result of the operation.

settable attribute
See *initially settable attribute*, *resettable attribute*.

severity
An indication of how serious an error condition is.

shell In the AIX operating system, a command interpreter that acts as an interface between the user and the operating system. In InfoPrint documentation, all shell examples use the Korn shell.

shift-out, shift-in code
Control characters used to indicate the beginning and end of a string of double-byte, ideographic characters.

shortest-job-first
In InfoPrint, a queuing technique where the next job assigned to the first position in the queue is the shortest job in the queue. Contrast with *deadline*, *FIFO (first-in-first-out)*, *job-priority*, and *longest-job-first*.

shut down
In InfoPrint, the action used to halt all server or actual destination processes without deleting the server or actual destination.

signature
A group of pages that are printed, folded, cut, and bound together. Manual placement of pages in the signature is determined using a folding dummy.

simplex

In InfoPrint, the value of the document or actual destination **plex** attribute indicating that output images are placed on the media in a head-to-head format, so that the top of one image is at the same edge as the top of the next image. Depending on the value of the document or actual destination **sides** attribute, the document can be printed on one or both sides of the paper. Contrast with *tumble*; see also *simplex printing* and *duplex printing*.

simplex printing

Printing on only one side of the paper. Contrast with *duplex printing* (1).

Printing on one or both sides of the paper, placing output images on the media in a head-to-head format, so that the top of one image is at the same edge as the top of the next image. Contrast with *tumble duplex printing*; see also *duplex printing* (2).

SMIT System Management Interface Tool.

SNA Systems Network Architecture.

spiral binding

A type of book binding in which wire or plastic coils are threaded through a series of holes or slots in the binding edge. Contrast with *edition binding*, *perfect binding*, and *wire-o binding*.

spot color

Individual colored inks formulated to exactly match a specified color. Spot color is used when CMYK process color cannot produce a reasonable facsimile of the color or when vivid color is needed. Spot color is also used when fluorescent or metallic colors are needed.

spread

In color printing, an area whose dimensions have been enlarged to eliminate white space between it and another color. Contrast with *choke*.

start sheet

The sheet of paper, blank or otherwise, that can precede a job. See also *auxiliary sheet*.

state Synonym for *object state*.

stripping

The process of mechanically assembling

film into plate layouts. Page imposition takes place during stripping.

subnet mask

A bit template indicating which part of an IP address represents the network. A 1 in the subnet mask means that the corresponding bit in the IP address is part of the network address; a 0 means that it is not. For example, if the IP address is 9.99.12.137 and the subnet mask is 255.255.255.0, the network address is 9.99.12.0.

subnetwork

Any group of nodes that have a set of common characteristics, such as the same network ID.

In the AIX operating system, one of a group of multiple logical divisions of another network, such as can be created by TCP/IP.

subtractive color system

A system that reproduces an image by mixing (adding) appropriate quantities of cyan, magenta, and yellow paints on white paper. These paints reflect certain colors and absorb—or subtract—others. Contrast with *additive color system*.

superuser

Synonym for *root user*.

supported

In InfoPrint, pertaining to the specific job attribute values that the actual destination can accept during job validation. InfoPrint validates the requested attribute values of the job against the supported attribute values of the actual destination to determine whether the actual destination can handle that job. Contrast with *requested*.

synchronous

Occurring with a regular or predictable time relationship to a specified action. Contrast with *asynchronous*.

system administrator

Synonym for *administrator*.

System Management Interface Tool (SMIT)

In the AIX operating system, an interface tool for installation, maintenance, configuration, and diagnostic tasks. SMIT lets you perform tasks without entering any commands.

Systems Network Architecture (SNA)

The description of IBM's logical structure, formats, protocols, and operational sequences for sending units through, and controlling the configuration and operation of, networks.

T

table reference character (TRC)

An optional control character in a print data set. The TRC identifies the font used to print the record and can be used to select a font during printing.

Tagged Image File Format (TIFF)

A digital format for storing scanned images. TIFF files are also referred to as raster format files (as opposed to vector format files). When used in desktop publishing, TIFF files produce only a low-resolution FPO image; the high-resolution data remains on the hard disk.

task help

A type of online help that provides a list of tasks that can be completed with a selected object. When you select a task, the help provides step-by-step information about how to complete the task.

TCP/IP

Transmission Control Protocol/Internet Protocol.

TCP/IP-attached printer

A printer device attached to an RS/6000 computer through telecommunication lines using the TCP/IP protocol.

In InfoPrint, a PSF physical printer that represents a TCP/IP-attached printer device. See also *AIX-attached printer*, *direct-attached printer*, and *upload-TCP/IP-attached printer*.

template

In the InfoPrint Manager Administration GUI, an object that represents a set of default attribute values that has been defined for creating a particular type of object, such as an actual destination.

ticket See *job ticket*.

TIFF Tagged Image File Format.

Transmission Control Protocol/Internet Protocol (TCP/IP)

A set of communication rules used in the Internet and in any network that follows the U.S. Department of Defense standards for inter-network protocol. TCP provides a reliable host-to-host protocol between hosts in packet-switched communications networks and in interconnected systems of such networks. It assumes that the Internet Protocol (IP) is the underlying protocol. See also *Internet Protocol*.

trapping

In desktop publishing, the amount of overlap in overprinting colors. Trapping prevents white paper showing through gaps caused by normal errors in registration. On sheet-fed presses, trapping is usually 0.25 point. See also *choke* and *spread*.

TRC Table Reference Character.

TrueType font (TTF)

A font format based on scalable outline technology with flexible hinting. Glyph shapes are based on quadratic curves. The font is described with a set of tables contained in a TrueType Font File.

TTF TrueType font.

tumble

In InfoPrint, the value of the document or actual destination **plex** attribute indicating that output images are placed on the media in a head-to-toe format, so that the top of one image is at the same edge as the bottom of the next image. The document must be printed on both sides of the paper. Contrast with *simplex*.

tumble duplex printing

Printing on both sides of the paper, placing output images on the media in a head-to-toe format, so that the top of one image is at the same edge as the bottom of the next image. Contrast with *simplex printing (2)*, *duplex printing (2)*.

U

UCR Under color removal.

under color removal (UCR)

Conversion of neutral color areas to black ink that reduces use of CMY inks, improves trapping, and reduces setup time. Generally, UCR is performed during

image scanning, but some RIPs perform it during processing. Synonymous with *gray component replacement (GCR)*.

unmanage

In the InfoPrint Manager Administration GUI, the action used to put an object into a mode where its icon does not reflect the changes of status for the object.

upload printer

See *upload-TCP/IP-attached printer*.

upload-TCP/IP-attached printer

In InfoPrint, a PSF physical printer that represents a printer device attached through an MVS system and managed by PSF/MVS. InfoPrint communicates with the MVS system through the TCP/IP network. See also *AIX-attached printer*, *direct-attached printer*, and *TCP/IP-attached printer*.

V

validate

In InfoPrint, to compare the attribute values requested by a job with the supported attribute values of the actual destinations in the system and to determine whether there is an actual destination capable of printing or sending the job.

value A specific characteristic of an attribute.

variable

A name used to represent a data item whose value can change while the program is running.

variable data

Data that can be changed between copies of a document. For example, a form letter (constant data) can be merged with variable data, such as a customer's name and address to produce personalized documents.

varnish

A protective layer applied to a finished sheet, usually for photos, but sometimes used as a design element because of its reflective qualities. Varnishes can be tinted.

vector An absolute coordinate point and line in space. PostScript files can contain vector artwork. Vector files are converted to rasters during the RIP process.

velox A black and white photographic print made from a halftone negative, to be used as a proof copy.

vignette

An image with soft, fade-away edges.

Virtual Machine (VM)

An IBM licensed product that manages the resources of a single computer so that multiple computing systems appear to exist.

A virtual data processing system that appears to be at the exclusive disposal of a particular user, but whose functions are accomplished by sharing the resources of a real data processing system. (T)

Virtual Storage Extended (VSE)

An IBM licensed program whose full name is the Virtual Storage Extended/Advanced Function. It is a software operating system controlling the execution of programs.

Visual Systems Management (VSM)

In AIX, a type of graphical user interface that allows system management through the direct manipulation of objects.

VM Virtual Machine.

VSE Virtual Storage Extended.

VSM Visual Systems Management.

W

web A roll of paper used in web or rotary printing.

well In the InfoPrint Manager Administration GUI, an area in a pane that contains a group of objects related to the objects in the pane; for example, a queues well in a servers pane.

what you see is what you get (WYSIWYG)

Refers to the fact that the composite image displayed on the screen at a computer workstation has the appearance of the final printed image.

window

A rectangular area of the screen that you can move about, place on top of, or pull under other windows, or reduce to an icon.

wire-o binding

A continuous double series of wire loops

run through punched slots along the binding side of a booklet. Contrast with *edition binding*, *perfect binding*, and *spiral binding*.

with-request

In InfoPrint, a document transfer method where the client transfers the documents directly to the server. Contrast with *pipe-pull*.

workstation

A terminal or microcomputer, usually one that is connected to a mainframe or to a network, at which a user can use applications.

write access

A level of authorization that grants the ability to modify data.

WYSIWYG

What you see is what you get.

X

X-Windows

A network-transparent windowing system developed by MIT. It is the basis for Enhanced X-Windows, which runs on the AIX Operating System.

xerography

A dry printing process using corona-charged photoconductive surfaces to hold latent images that are developed with a dry toner and then transferred to paper and fused with heat.

Xstation

A terminal that is connected through a network to an RS/6000 computer, from which a user can perform command-line functions and run X-Windows based applications.

Index

Special characters

<install path>\grd directory 239

A

access control list (ACL) 33, 35
interoperating environment 133, 135
types

- destinations 36
- operations 36
- queues 36
- servers 36
- wildcarding 36
- working with 36

accessibility 341

accounting

- data 111, 119
- data file 119
- information 111, 116
- PSF DSS user-exit 117
- usage by DSS 114
- user exit 71

accounting-exit

- post-printing 116

accounting.log file 114

acif 190

acL_admin 35

actual destination 59

- associating input data user-exit
program with 107

- associating output data user-exit
program with 107

- attributes 53

- BSD printer 11

- destination support systems (DSS) 11

- IPP printer 11

- Passthrough printer 11

- pause 315

- PSF printer 11

- restarting 316

- resuming 316

- selecting 11

Add Printer Wizard 305

adding

- Internet Printing Protocol (IPP)

- gateway printer to desktop 306

- users to a security group 35

administrative tasks

- performing 43

Advanced Function Presentation 199

Advanced Function Presentation

(AFP) 179

- data stream 190

AFP 199

- bin numbers 269, 271

- capabilities for transforming to 201

- configuration file for 203

- resources for graphic data 202

- scenarios for using data 200

AFP Download Plus 169

AFP Resources

- in MVS Download 166

- remote 49

AFP resources, search order 62

AIX

- submitting jobs from 275

AIX command line, printing from 263

ANSI carriage controls

- definition 191

apka2e 87

appearance

- dark 259

- highlight midtone 259

- standard 259

ASCII 179, 190

asciinp.c 87

asciinpe.c 87

associating

- a transform with an actual
destination 215

attachment types

- channel 13

- command 13

- other driver 13

- TCP/IP 13

attribute

- accounting-exit 116

- ack-interval 329, 333

- actual destination 53

- current-page-printing 329

- default-character-mapping 234

- delivery-address 28

- delivery-method 28

- destination-tcpip-internet-address 57

- document-formats-ripped-at-
destination 115

- event-identifiers 28

- events-supported 28

- input-trays-medium 53

- job-copies-completed 329

- job-end-message 32

- job-page-count 115, 116

- job-start-message 32

- job-start-wait 32

- log-accounting-data 111

- media-sheets-completed 329

- media-supported 53

- notification-profile 27, 307

- notify-operator 31

- output-bin-numbers 53

- page-count 116

- page-select 333

- pages-completed 329

- plexes-supported 53

- printer-model 53

- psf-exit-form-definition 105

- psf-exit-page-mark 105

- psf-exit-program-name 105

- psf-tray-characteristics 53

- resource-context 170

- resource-context-font 170

attribute (*continued*)

- resource-context-overlay 170

- resource-context-page-definition 170

- resource-context-page-segment 170

- resource-coresource-context-form-
definition 170

- snmp-community-name 57

- snmp-discovery-during-startup 59

- snmp-retry-count 58

- snmp-timeout 58

- snmp-write-community-name 57

- transform-message-file-name 170

- use-snmpp 57

attributes

- capture-inline-off-resources 231

- log-backup-number 37

audit

- data 111, 119

- information 116

- PSF DSS user-exit 117

- user exit 71

audit.log file 114

authority 35

automatic tasks during migration 125

auxiliary sheet 97

- creating 97

- examples of 100

- managing 97

- object 98, 105

- preparing to work with 97

- style 97

- terms 97

auxiliary-sheet attribute

- activating for post-print accounting

- information 106

auxiliary-sheet object 97

- activating for accounting or audit

- information 106

- associating with PSF printers 106

- configuring 105

- creating 105

- using pdcreate command 105

- default

- accounting-log 98

- blank 98

- brief 98

- full 98

- job-ticket 98

- none 98

- name 97

B

back up 125

backspacing 301, 316, 317

bar code support 201

bin mapping 267

- finishing 268

- PCL 268

- PostScript 270

- bin numbers
 - AFP 269, 271
 - PCL 268
- BSD printer 11

C

- calibrating
 - densitometer 257
 - halftone 260
 - printer 259
- calibrating a printer using the halftone management system 259
- capabilities, XML Extender 201
- capture-inline-cmr-resources 65
- capture-inline-off-resources attribute 231
- changing
 - notification 26
- changing Select notifications 22
- CMRs
 - search order 64
- cmt.cfg file 247
- cmt.cfg file, sample 249
- cmtsampl file 247
- code page
 - determining 196
- coded character sets
 - converting 94
- color mapping table
 - parts of 247
 - specific object types to map 248
- color mapping table, submitting source and output files for printing 251
- color mapping table, creating 249
- color space value
 - GOCA pattern fill 248
 - Highlight color 248
 - Standard Object Content Architecture (OCA) 248
- command
 - IPDS operator 325
 - pdaccount 111, 114
 - pdclean 325
 - pdcreate 105
 - pddisable 325
 - pdenable 325
 - pdls 325
 - pdpause 326
 - pdpr 149, 287, 295
 - pdresume 326
 - pdrm 326
 - pdset 112
 - pdshutdown 333
 - pdspace 326
- commands
 - acif 190
 - line2afp 190
 - pdcreate 215
 - pddelete 215
 - pdls 215
 - pdpr 169
 - pdset 27, 215
 - uconv 94
- common customization tasks 203
- community
 - SNMP 57

- conditionally- terminating transform 209
- conditionally- terminating transform object
 - example 218
- Configurable Transform Subsystem 209
- configuration files 199
 - transform 274
 - xml2afp.cfg 203
 - xml2pdf.cfg 206
- configuring
 - for receiving notifications with Select on Windows 22
 - Halftone Management System 255
 - halftone support 255
 - transforms 211
- control 156
- converting coded character sets 94
- Create IPP Printer Wizard 17
- creating
 - a transform object that updates the job's page count 220
 - conditionally- terminating transform object 218
 - terminating transform object 216
 - transform to convert data and print only smaller files 218
 - transform to copy a file without printing 216
 - transforms 211
- creating a color mapping table 249
- custom patch sets, defining 259
- customization tasks 203
 - common 203
- customizing
 - error logs in the server 37
 - img2afp transform 186
 - transform
 - Graphic interchange format (GIF) 189
 - Joint photographic experts group (JPEG) 189
 - line data 194
 - Portable document format (PDF) 180
 - PostScript 180
 - Printer control language (PCL) 180
 - Tag image file format (TIFF) 189

D

- data objects
 - search order 64
- data stream
 - AFPDS 12
 - ASCII 12, 190
 - DBCS ASCII 190
 - EBCDIC DBCS 190
 - error 329
 - job continues printing 330
 - job is terminated, no pages print 330
 - job is terminated, some pages print 331
 - IPDS 11, 12, 13
 - line data 12
- data stream (*continued*)
 - MO:DCA-P 169
 - non-IPDS 11, 12
 - PCL 11, 12, 13, 267, 277
 - PDF 12
 - PostScript 11, 12, 267, 277
 - PPDS 11, 12, 13
 - transforms 209
- db2afp 179
- DBCS 179
- DBCS ASCII 190
 - definition 195
 - font 234
 - font resources 196
- DBCS EUC
 - definition 195
 - font 234
 - font resources 196
- DBCS fonts
 - installing on Windows 235
 - transform 179
- Default Gateway 9
- default job 26
- default notification profile 24
- default-character-mapping 234
- defining
 - custom patch sets 259
 - InfoPrint servers to the halftone management system client 259
 - transform sequence 210
- delete
 - and retain 319
 - orphaned files 304
 - users from a security group 35
- delivery-address 28, 307
- delivery-method 28
- densitometer, calibrating 257
- densitometer, measuring optical density with 263
- destination
 - interoperating environment 135
 - security 33
- Destination Control File (DCF) 151
 - advanced editing 159
 - control statements 153
 - control statements, syntax 154
 - copying 157
 - debugging 159
 - editing 158
- destination support system (DSS) 11, 111, 114, 116, 314, 316, 321
- destination-MID-support-enabled
 - destination-MID-release-timer 15
- destination-tcpip-internet-address 57
- device_controls finishing option 182
- device-specific actual destination
 - attributes
 - non-settable 55
 - settable 55
- Direct download 173
- Direct download method
 - performance 173
- directories 239
 - /usr/lpp/psf/bin 247
 - /usr/lpp/psf/cmt/ 252
 - /usr/lpp/psf/config 247
 - <install path>\grd 239

- directories (*continued*)
 - <install_path>\var\psf\
 - PrinterName 241
 - global resource identifiers (GRIDS) 241
 - install_path\psf\config 249
- directory locations
 - user-exit programs 103
- disability 341
- disk-space-low event 41
- disks
 - monitored by InfoPrint Manager
 - for Windows 42
- DNS 9
- Double byte font 234
- Double Byte font
 - transform 179
- Double Byte text stream 179, 195
- DSS (see also Destination support system) 316

E

- E-mail 26
- EBCDIC DBCS 190
- ecp 232
- edge marks 98
- Enable MID Support 15
- enabling font capture
 - for OpenType fonts 231
- environment variable
 - setting 196
- environment variables
 - PSFPATH 63
- ERP printing 277
 - Windows 278
- error
 - IPDS
 - data stream errors 329
 - insufficient memory 331
 - intervention required
 - conditions 332
 - unrecoverable problems 333
 - messages 330, 331, 332
 - out of paper 318
 - paper jam 318
 - error logs
 - customizing 37
 - using the log-backup-number
 - attribute 37
 - event-identifiers 28
 - events
 - detecting 19
 - disk-space-low 41
 - messages about 19
 - out-of-disk-space 42
 - events-supported 28
 - examples
 - auxiliary sheets 100
 - img2afp transform 188
 - of creating transform objects 216
 - Exit Program
 - customizing 162
 - modifying 162
 - MVS Download 161
 - using 162
 - extended code pages 232

F

- files 239
 - accounting.log 114
 - audit.log 114
 - charset.grd.sample 239
 - cmt.cfg 247
 - cmt.cfg sample 249
 - cmtsampl 247
 - codepage.grd.sample 240
 - cpgid.grd.file 240
 - fgid.grd.sample 240
 - notifyd_error.cfg 38
 - pie1.cfg 251
 - pie1.out 251, 252
 - prt1.accounting.log 114
 - Resource Access Table 230
 - spl_error.cfg 37
- finishing
 - bin mapping 268
 - InfoPrint 45 287
 - InfoPrint 70 294
 - staple and punch options with
 - ps2afp 183
- fixed-length files
 - defined 192
- font 227
 - for DBCS ASCII 234
 - for DBCS EUC 234
 - for Double-Byte transformed file 234
 - for line data 235
 - for PDF data 227
 - for PostScript data 227
 - Japanese DBCS 235
 - mapping files 227
 - remote resources 49
 - resources for DBCS ASCII printing
 - setting up 235
 - resources for DBCS EUC printing
 - setting up 235
 - substitution 229
- font capture
 - for fonts in a library 231
 - overview 231
- font index files 199
- font resources
 - DBCS ASCII 196
 - DBCS EUC 196
- font support 201
- fonts
 - global resource identifiers (GRIDS) 239
 - printer-resident 239
 - resource-context object 61
 - using OpenType fonts 229
- form definition 98
 - finishing 288, 295
 - remote resources 49
- formatting objects 199
 - definition 199
 - supported 335
 - block 336
 - block-container 336
 - character 337
 - external-graphic 337
 - flow 336
 - initial-property-set 337

- formatting objects (*continued*)
 - supported (*continued*)
 - inline-container 337
 - inlineinline 337
 - layout-master-set 335
 - list-block 339
 - list-item 339
 - list-item-body 339
 - list-item-label 339
 - page-number 338
 - page-sequence 335
 - page-sequence-master 335
 - region-after 336
 - region-before 335
 - region-body 335
 - region-end 336
 - region-start 336
 - repeatable-page-master-alternatives 335
 - repeatable-page-master-reference 335
 - root 335
 - simple-page-master 335
 - single-page-master-reference 335
 - static-content 336
 - table 338
 - table-and-caption 338
 - table-body 338
 - table-caption 338
 - table-cell 339
 - table-column 338
 - table-footer 338
 - table-header 338
 - table-row 338
 - forward spacing 301, 316, 317

G

- gateways
 - Windows gateway printer
 - adding to desktop 305
- gathering
 - accounting data 111
 - audit data 111
- generating color mapping table source
 - and output files 247
- GIF 179
- global resource identifiers (GRIDS) 239
 - description 239
 - files that come with InfoPrint Manager
 - charset.grd.sample 239
 - codepage.grd.sample 239
 - cpgid.grd.sample 239
 - fgid.grd.sample 239
 - global id example 244
 - location 241
 - modifying 243
 - preventing InfoPrint from using 246
 - resident font id example 243
 - searching for 241
 - specifying 245
 - specifying fonts 239
 - understanding syntax rules 241
 - uses of 239
- GOCA pattern fill color space 248
- Graphic interchange format (GIF) 179

- graphic support 202
- group
 - identifying 36
 - name 35
 - security 35
- groups
 - working with 36

H

- halftone
 - calibrating 260
 - specifying for printing on InfoPrint server 263
- halftone management system
 - invoking 255
 - overview 255
 - starting 257
- Halftone Management System
 - actual screen frequencies and angles 256
 - starting
 - client 257
 - error message 257
 - server 257
 - using 255
 - Versions 2 or Standard Toner 257
 - Versions 2, 3, or Standard Toner 257
 - Versions 3 Toner 256
- halftones
 - configuring printer devices for 255
- header (start) page user exit 71
- help for notification messages 31
- Highlight color color space 248
- host system 11
- host systems
 - PC-based applications and 12
- hostname
 - changing 45
 - non-namespace server 46
- hot folder
 - job attributes 307
 - mapping 281
 - mounting 281
 - staging jobs 307
- hot folders
 - submitting multiple-document jobs 308
- Hypertext Transfer Protocol (HTTP)
 - Internet Printing Protocol (IPP) 17

I

- IBM TCP/IP Network Port Monitor 116
- iconv command
 - replaced with uconv command 94
- identifying
 - group 36
 - user 36
- imageout keyword
 - affect on processing 193
- img2afp transform 186
 - AIX printer halftone files 187
 - configuration files 186
 - customizing 186
 - examples 188

- img2afp transform (*continued*)
 - limitations 188
 - thresh printer files 187
- InfoPrint 2000 301
 - spacing 316, 317
- InfoPrint 3000 301
 - spacing 316, 317
- InfoPrint 4000 301
 - spacing 316, 317
- InfoPrint 4000 printer
 - actual screen angles 256
 - actual screen frequencies 256
- InfoPrint 4100 301
- InfoPrint 4100 printer
 - actual screen angles 256
 - actual screen frequencies 256
- InfoPrint 45
 - duplexing 303
 - finishing options 287
 - using 303
- InfoPrint 5000
 - setting up
 - Model CS1 279
 - Models CD1/2 279
- InfoPrint 70
 - finishing options 294
 - using 303
- InfoPrint Manager 123, 124, 173
- InfoPrint Manager accounting 114
 - actual destination name 112
 - completion time 112
 - data stream 112
 - from a BSD DSS 115
 - from a Passthrough DSS 116
 - from a PSF DSS with Command 115
 - from a PSF DSS with Other-Driver 115
 - from a PSF DSS with TCP/IP 114
 - from an Internet Printing Protocol DSS 115
 - global job-id 112
 - how different InfoPrint printers gather data 114
 - job name 112
 - job owner 112
 - managing the logs 113
 - octets-completed 112
 - pages-completed 112
 - submission time 112
- InfoPrint Manager Administration GUI
 - administrative tasks 43
- InfoPrint Manager for AIX 135, 276
 - using with InfoPrint Manager for Windows 133
- InfoPrint Manager for Windows
 - interoperating environment 46
- InfoPrint Manager line printer daemon (LPD) 121, 276, 308
 - configuring 309
- InfoPrint Manager Management Console
 - updating the global search path 232
- InfoPrint Manager Notifications 19
 - using 310
- InfoPrint Manager Security 33, 45
- InfoPrint Select
 - finishing 288, 296
 - job status 310

- InfoPrint servers, defining to the halftone management system 259
- Infoprint Submit Express
 - finishing 288
- InfoPrint Submit Express
 - finishing 296
- InfoPrint Submit Express, printing
 - from 263
- InfoPrint System Migration utility 125
- InfoPrint TCP/IP Network Port Monitor 116
- infoprint_attribute 156
- infoprint_definition 156
- InfoPrint70
 - duplexing 303
- inpexit keyword 88
- input data
 - user-exit programs
 - associating with actual destination 107
- input data format
 - PCL 209
 - PostScript 209
- input data user exit 71
- input record exit 88
 - apka2e 87
 - asciinp.c 87
 - asciinp.c 87
- input-trays-medium 53
- input/output parameters
 - OUTDATA_EXITDATA 86
- install_path\psf\config directory 249
- installing
 - DBCS fonts on Windows 235
- insufficient memory 331
 - example 332
- Internet Printing Protocol (IPP)
 - adding an IPP gateway to the desktop 306
 - auxiliary sheet 97
 - client software 15, 17
 - creating an IPP-enabled printer 17
 - IPP Gateway 15, 17
 - printer 11
 - printing to an IPP-enabled printer 17
 - using 17
- interoperating environment 133, 135, 276
 - changing server hostname 45, 46
 - configuration example 136
 - example configurations 134
 - namespace 134
 - printer driver 135
 - reasons for setting up 133
 - security 134
 - with multiple Windows 2000 servers 135
- interrupt job 311
- Interrupt Message Pages 98
- intervention required conditions 332
 - example 332
- IOCA object support 202
- IP address
 - changing 45, 47
 - class A 9
 - class B 9
 - secondary network 9

- IP Printway 11
- IPDS
 - error recovery
 - data stream errors 329
 - insufficient memory 331
 - intervention required
 - conditions 332
 - unrecoverable problems 333
 - print operator commands 325
- IPP (see also Internet Printing Protocol) 17
- IPP Gateway
 - finishing 289, 297
 - job status 310
- ismu utility 123
- ismu Utility
 - prerequisites 124

J

- Japanese DBCS fonts
 - printing at the end of a job 235
- job
 - hold 311, 312
 - interrupt 311
 - pause 314, 315
 - restarting 311, 312
 - status 310
 - stopping 312
 - submitting to the InfoPrint Manager LPD 309
 - submitting using LPR 310
- job-end-message 32
- job-start-message 32
- job-start-wait 32
- Joint photographic experts group (JPEG) 179
- JPEG 179

K

- keyboard 341

L

- limitations
 - img2afp transform 188
 - printing line data with OpenType fonts 233
- limitations of actual screen frequencies and angles on InfoPrint 4000 and 4100 printers 256
- limitations, XML Extender 201
- line data
 - data stream (ASCII) 179
 - definition 190
 - font 235
 - transform 190
 - sample PSF DSS user-exits 86
- line printer client (LPR) 121, 275, 308
- line printer daemon (LPD) 275
 - InfoPrint Manager LPD 276
 - submitting print jobs 308
 - TCP/IP Print Services 276
 - using 121, 308

- line-data input file
 - attributes 93
- line2afp 190
- local area network (LAN)
 - bandwidth 9
- log-accounting-data 111
- log-backup-number attribute 37
- LPD (see 'line printer daemon') 121, 308
- lprafp 275
 - install/configure 277

M

- machine carriage controls
 - definition 191
- maintenance 317
- Managed IPDS Dialog (MID) 15
- Management Console 309
 - administrative tasks
 - Windows 2000 43
 - security 33
 - working with groups and ACLs 36
- managing
 - contents of the accounting data file 119
 - InfoPrint accounting logs 113
- manuals
 - Graphics Objects Content Architecture for Advanced Function Presentation Reference 249
 - InfoPrint 400 HC Introduction and Planning Guide 249
 - InfoPrint Hi-Lite Color Application Design Reference 249
- maximum-presentation-object-containers-to-keep attribute 65
- measuring optical density 263
- media-supported 53
- memory
 - insufficient 331
- message
 - notification, getting help for 31
- Microsoft Unicode Open Type Fonts 229
- MID Release Timer 15
- migrate 125
- Mixed Object Document Content Architecture 210, 239
- MO:DCA-P 169
- MO:DCA-P output support 202
- monitoring disk use
 - polling schedule 41
- multiple-document jobs
 - hot folders 308
- multiserver configuration 134
- MVS
 - Exit Program, using 162
- MVS Download
 - configuring 149
 - creating a receiver 150, 163
 - default configuration 149, 150
 - Destination Control File (DCF) 149, 151
 - reasons to modify the DCF 150
 - exit program 149
 - Exit Program 157, 161
 - Exit Program, customizing 162
 - Exit Program, modifying 162

- MVS Download (*continued*)
 - multiple data sets 169
 - MVS user exit 15 169
 - page count 172
 - resubmitting jobs 304
 - setting up 149
- mvs_definition 154
- mvs_keyword 154
- mvs_parameter 155

N

- namespace
 - interoperating environment 134, 135
 - sharing 133
- namespace server 135
- netware 222
 - using 223
- network adapter card
 - installing multiple 9
- network drive
 - mapping 51
- non-namespace server 135
- non-zero return codes 93
- notification
 - changing 26, 27
 - message 19
 - actual destination 24
 - default job 24
 - job 24
 - logical destination 24
 - queue 24
 - server 24
 - messages, getting help for 31
 - notification profile 19
 - default 24, 42
 - modifying 42
 - Select 22
 - notification-profile 27, 307
 - notify-operator 31
 - notifyd_error.cfg 38

O

- object
 - interoperating environment 135
 - security 33
- object types to map 248
- objects supported, formatting 335
- OpenType fonts 61
 - capturing fonts in a library 231
 - limitations 233
 - non-Latin typefaces 229
 - Resource Access Table file 230
 - Unicode support 229
 - updating the global search path 232
 - using 229
 - using font capture 231
- operation
 - security 33
- operator
 - tasks 325
- optical density, measuring with a densitometer 263
- orphaned files
 - deleting 304

- orphaned files (*continued*)
 - deleting from the system 304
 - resubmitting 304
- out of paper 318
- out-of-disk-space event 42
- outexit keyword 90
- output data
 - PSF DSS user exits 85
 - user-exit programs
 - associating with actual destination 107
- output data format 209
- output data user exit 71
- output document size support 201
- output fields
 - Completion Date 83
 - Completion Time 83
 - DOCRU 83
 - ExtStart Date 82
 - ExtStop Date 83
 - Fonts used 82
 - Number of Overlays used 82
 - Pages Printed 81
 - Segments used 82
 - Start Date 83
 - Start Time 83
 - Stop Date 83
 - Stop Time 83
- output record exit 90
- output-bin-numbers 53
- overlay support 202
- overlays
 - resource-context object 62

P

- page count
 - MVS Download 172
- page definitions
 - resource-context object 62
- page segment support 202
- page-definition (pagedef)
 - remote resources 49
- paper bins 267
- paper fed LEF 291, 292, 298
- paper fed SEF 292, 298
- paper jam 318
- parts of a color mapping table
 - source groups 247
 - target groups 247
- Passthrough printer 11
 - auxiliary sheet 97
- pause actual destination 315
- pause printer 315
- pausing a job that's printing 314, 315
- PC-based applications 11
 - host systems and 12
- PCL 11, 179
 - bin numbers 268
 - paper bins 267
- PCL printer
 - submitting PSF printer input 265
- pdaccount 111, 114
- pdaccount sample output 112
- pdclean 325
- pdcreate 215
- pdcreate command 105
- pddelete 215
- pddeviceop command
 - with SNMP devices 56
- pddisable 325
- pdenable 325
- PDF 179, 199
 - capabilities for transforming to 203
 - configuration file for 206
 - font 227
 - output support 203
 - scenarios for using data 200
- pdls 215, 325
- pdls command
 - with SNMP devices 56
- pdpause 326
- pdpr 149, 169
 - finishing 287, 295
- pdresume 326
- pdrm 326
- pdset 27, 112, 215
- pdset command
 - with SNMP devices 56
- pdshutdown 333
- pdspace 326
- performance 58
- permission
 - delete 33
 - multiple security groups 35
 - read 33
 - write 33
- plexes-supported 53
- polling schedule
 - disk use 41
- Portable Document Format 199
- Portable document format (PDF) 179
 - font 227
- post-print accounting
 - information 116
- PostScript 11, 179, 210, 211, 222, 223, 288, 296
 - font 227
 - paper bins 267
- PostScript transform
 - staple and punch options 181
- PPDS printer
 - submitting PSF printer input 265
- Print Services Facility for OS/2 (PSF/2)
 - netware 222
- printer
 - pause 315
 - restarting 316
 - resuming 316
- printer calibration icon 255
- Printer Control Language (PCL) 179
- printer devices
 - configuring to support halftones 255
 - InfoPrint 20 255
 - InfoPrint 4000 255
- printer driver 135, 277
 - Generic / Text Only 277
- Printer Properties notebook 75
- printer-model 53
- printing from AIX command line 263
- printing from InfoPrint Submit Express 263
- processing
 - imageout keyword 193

- properties notebooks 26
- properties supported 335
- prt1.accounting.log.v1 file 114
- ps2afp transform
 - staple and punch options 183
- ps2afpd.cfg file
 - device_controls option 182
 - modifying for finishing 182
 - plex keywords 182
 - staple and punch options 181
- PSF
 - attachment types 13
- PSF Destination Support System (DSS) 316, 318
 - user-exit programs 71
- PSF DSS user exits
 - auxiliary sheets 97
 - inputs and outputs
 - output data 85
 - sample programs
 - accounting 72
 - accounting log 72
 - audit 72
 - header page 72
 - input data 72
 - output data 72
 - separator page 72
 - trailer page 72
 - structure 86
- PSF DSS user-exits
 - accounting 117
 - activating 74
 - audit 117
 - auxiliary sheet 97
 - compiling 74
 - creating 71, 74
 - installing 74
 - line data transform
 - sample programs 86
 - sample programs 72
 - supported types
 - accounting user exit 71
 - audit user exit 71
 - header (start) page user exit 71
 - input data user exit 71
 - output data user exit 71
 - separator page user exit 71
 - trailer (end) page user exit 71
 - using 71
- PSF for OS/2 223
- PSF printer 11
 - auxiliary sheet 97
 - finishing 288
- PSF printer input 265
- psf-exit-form-definition 105
- psf-exit-page-mark 105
- psf-exit-program-name 105
- PSFPATH 63

Q

- queue
 - interoperating environment 135

R

- receiver
 - MVS Download 150, 163
- receiving notifications with Select on Windows
 - configuring 22
- related publications 5
- remote administration 43
- remote resources
 - accessing 49
 - Windows 2000 49
 - location 51
- resexit keyword 91
- resident fonts 239
- Resource Access Table file 230
- resource allocation table
 - registering OpenType fonts 61
- resource exit 91
- resource-context 170
- resource-context object
 - resource-context object 61
- resource-context objects
 - changing directory paths 69
 - creating and managing 61
 - data object font resources 61
 - data objects 61
 - fonts 61
 - form definition 61
 - overlays 62
 - page definition 62
 - page segments 62
 - resource-context object 62
 - resource-context objects 61
 - resource-context objects, new 68
 - restriction 61
- resource-context-font 170
- resource-context-form-definition 170
- resource-context-overlay 170
- resource-context-page-definition 170
- resource-context-page-segment 170
- resources
 - remote 49
- resources for graphic data 202
- restarting actual destination 316
- restarting job 311, 312
- restarting printer 316
- resubmitting
 - jobs to MVS Download 304
 - orphaned files 304
- resuming actual destination 316
- resuming printer 316
- retained jobs 313, 320
- retaining resources for multiple print jobs 65
- return code
 - non-zero 93
- reusing resources for multiple print jobs 65
- running XML transforms 201

S

- sample cmt.cfg file 249
- scenarios for using AFP and PDF data 200

- search order
 - CMRs 64
 - data objects 64
- secondary network
 - creating 9
 - Default Gateway 9
 - DNS 9
 - using private IP addresses 9
 - WINS 9
- security
 - access control list (ACL) 46
 - destination 33
 - interoperating environment 134, 135
 - Management Console 33
 - managing 33
 - object 33
 - operation 33
 - permission
 - delete 33
 - read 33
 - write 33
 - security group 35
 - acl_admin 35, 45
 - adding users to 35
 - admin- 35
 - deleting users from 35
 - Job Ticketer 35
 - modifying 35
 - oper- 35
 - Security level 33
 - Select notifications
 - changing 22
 - notification profile 22
 - selecting
 - actual destination 11
 - finishing options 290, 298
 - separator page user exit 71
 - sequence
 - user-exit programs 103
 - server
 - namespace 135
 - non-namespace 135
 - server hostname
 - changing 45
 - non-namespace server 46
 - server IP address
 - changing 45, 47
 - setting
 - environment variable 196
 - setting Color Mapping Table with InfoPrint Manager Administration GUI 251
 - setting up
 - font resources for DBCS ASCII and EUC printing 235
 - setting up InfoPrint 5000
 - Model CD1/2 279
 - Model CS1 279
 - shortcut keys 341
 - sides 317
 - Simple Network Management Protocol (SNMP) MIB 301
 - SNMP
 - attributes
 - snmp-community-name 57
 - snmp-discovery-during-startup 59

- SNMP (*continued*)
 - attributes (*continued*)
 - snmp-retry-count 58
 - snmp-timeout 58
 - snmp-write-community-name 57
 - use-snmp 57
 - communication
 - setting up 53
 - tuning 53
 - detecting, reporting printer
 - problems 54
 - polling 59
 - requests 53
 - smart-defaulting attributes 53
- SNMP connection lost 57
- SNMP printers
 - working with 53
- source groups, using 247
- spacing 312, 319
 - backspacing 316
 - forward spacing 301, 316
- specifying halftone for printing 263
- spl_error.cfg file 37
- Standard Object Content Architecture (OCA) color space 248
- staple and punch options 181
- starting
 - Halftone Management System
 - client 257
 - error message 257
 - server 257
- status
 - job 310
- stopping job 312
- structures of user-exit programs 75
- stylesheet language 199
- submitting
 - print jobs 309
- submitting color mapping table source and output files 251
- submitting jobs through the Windows command line 251
- supported formatting objects 335
- supported operating environments 123
- syntax
 - global resource identifiers (GRIDS) 241

T

- Tag image file format (TIFF) 179
- target groups, using 248
- TCP/IP address 57
- TCP/IP Print Services 121, 276, 308
- terminal server 43
- terminating
 - transform 209
- terminating transform object
 - example 216
- TIFF 179
- toner versions
 - effect on actual screen angles for InfoPrint 4000 ID5/ID6 256, 257
 - effect on actual screen angles for InfoPrint 4000 IR1/IR2 257
 - effect on actual screen angles for InfoPrint 4000 IR3/IR4 256, 257

- toner versions (*continued*)
 - effect on actual screen frequencies for InfoPrint 4000 ID5/ID6 256, 257
 - effect on actual screen frequencies for InfoPrint 4000 IR1/IR2 257
 - effect on actual screen frequencies for InfoPrint 4000 IR3/IR4 256, 257
 - effect on actual screen frequencies for InfoPrint 4100 HD1/HD2 256
 - effect on actual screen frequencies for InfoPrint 4100 HD3/HD4 256
 - effect on actual screen frequencies for InfoPrint 4100PD1/PD2 256
- trailer (end) page user exit 71
- transform
 - associating with an actual destination 215
 - conditionally-terminating 209
 - Configurable Transform Subsystem 209
 - configuration file 274
 - converting data 179
 - customizing
 - Graphic interchange format (GIF) 189
 - Joint photographic experts group (JPEG) 189
 - Portable document format (PDF) 180
 - PostScript 180
 - Printer control language (PCL) 180
 - Tag image file format (TIFF) 189
 - data streams
 - Double Byte text stream 179
 - Graphic interchange format (GIF) 179
 - Joint photographic experts group (JPEG) 179
 - Line (ASCII) 179
 - Portable document format (PDF) 179
 - PostScript 179
 - Printer control language (PCL) 179
 - Tag image file format (TIFF) 179
 - db2afp 179
 - Double Byte text stream 195
 - input data format 209
 - line data 190
 - customizing 194
 - options 209
 - output data format 209
 - terminating 209
 - working with 179
- transform objects
 - examples of creating 216
- transform sequence
 - defining 210
- transform_update utility
 - example 220
- transform_update utility, using 221
- transform-message-file-name 170
- transformation process 200
- transforms
 - configuring 211
 - creating 211

- transforms (*continued*)
 - img2afp 186
- types
 - of access control lists
 - destinations 36
 - operations 36
 - queues 36
 - servers 36

U

- uconv command
 - using 94
- Unicode extended code pages 232
- unrecoverable problems 333
 - example 333
- user
 - identifying 36
- user exit 15 169
- user ID 35
- user-exit 97
- user-exit program 98
- user-exit programs
 - accounting 111
 - audit 111
 - auxiliary sheet 97
 - directory locations 103
 - dynamically loaded 71
 - PSF DSS 71
 - sequence of 103
- User-exit programs
 - header (start) page 79
 - input data 83
 - separator page 79
 - structures 75
 - trailer (end) page 79
- users
 - multiple security groups 35
- using
 - line printer daemon (LPD) 121, 308
 - netware 223
- using source groups 247
- using target groups 248
- Using the transform update utility 221

V

- variable-length files
 - defined 192
- viewing
 - accounting data 119
 - audit data 119

W

- wildcarding
 - ACL 36
- Windows
 - ERP printing 278
- Windows 2000 43
 - accessing remote resources 49
 - accessing remote resources 49
 - Terminal Server 43
- Windows 2003 43
 - accessing remote resources 49
- Windows command values 251

- Windows gateway printer 278, 308
 - adding to desktop 305
 - defining 277
 - finishing 289, 297
 - job status 310
 - Management Console 278
- Windows Terminal Server 43
 - client
 - installing 43
- WINS 9
- Wizards
 - Add Printer 305
- write-community
 - SNMP 57

X

- XML 199
 - definition 199
 - scenarios for using transformed data 200
- XML transforms 199
 - capabilities and limitations 201
 - customization tasks 203
 - resources for graphic data 202
 - running 201
 - supported formatting objects 335
 - transformation process 200
- XML transforms support 199
 - bar code 201
 - font 201
 - graphic 202
 - MO:DCA-P output 202
 - output document size 201
 - PDF output 203
 - XSL formatting objects 201
- xml2afp.cfg 199
 - customizing 203
- xml2pdf.cfg 199
 - customizing 206
- XSL 199
 - definition 199
 - formatting objects 335
 - support 201
- XSL formatting objects 199
- XSL-FO 199



Program Number: 5648-F36

Printed in USA

G550-1073-02

