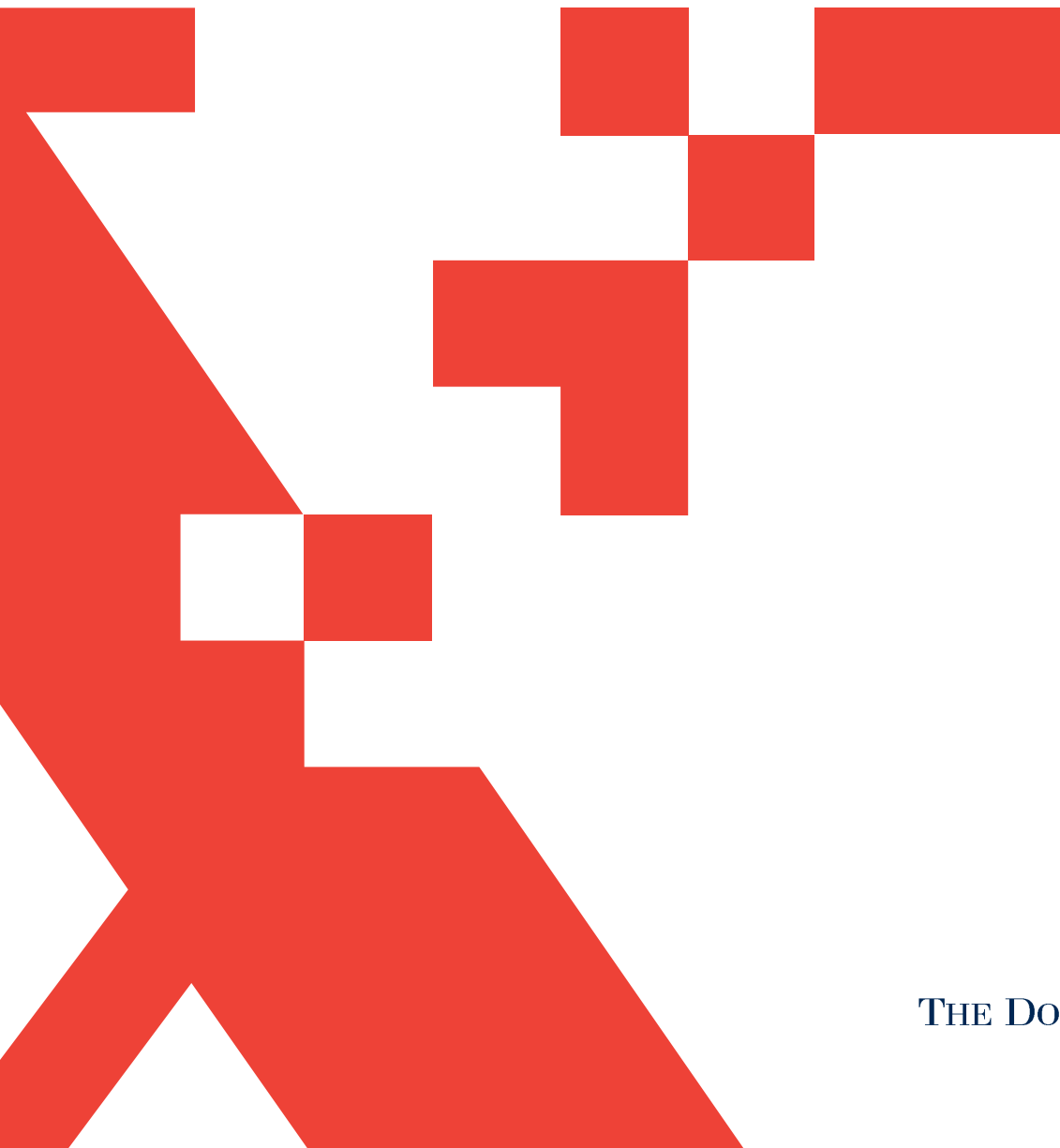


# *XPAF User Documentation*

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# *Section One:*

## *Introduction to XPAF*

Xerox Printer Access Facility (XPAF) software is a host-resident software product that enhances the capabilities and use of Xerox laser printers in the IBM MVS environment. XPAF retrieves data streams from JES, a third-party spool, or Xerox Direct Print Services (XDS) and prepares them for printing on a Xerox laser printer.

Xerox only supports the XPAF features and functions described in the user documentation that accompanies the software. Do not assume support is provided if it is not explicitly documented.

This document provides the information you need to install, manage, and print documents with XPAF. Additional sections found in the documentation include a complete list of the parameters and keywords used, error messages generated by XPAF, guides for operators and page format editor users, a glossary, and an index.

XPAF documentation is delivered in PDF format on a CD-ROM. It is designed to be viewed online; however, page layouts have been maintained so that you can duplex print all or part of the documentation as necessary.





# 1. *Getting started*

---

This chapter provides a brief description of the documentation and the conventions used.

## *XPAF User Documentation*

---

*XPAF User Documentation* has been reformatted for this release of XPAF (3.0.4). If you are familiar with former versions of the documentation you will notice that format changes have been made to facilitate delivery and use of the documentation on CD-ROM. For example, you will find that there is now only one table of contents, one index, and one glossary, rather than multiple versions of each. When you use this document online you will find that cross references (in light blue text) within the document are active links to the referenced areas of the documentation, and that the index and table of contents also provide active links directly to the subject matter.

This document is divided into the following sections:

- [\*Section One: Introduction to XPAF\*](#) provides an overview of this document and XPAF.
- [\*Section Two: Installing and Customizing XPAF\*](#) describes how to install the XPAF software on your system and tailor it to meet your site's specific requirements. It also describes how to set up your printers and perform an installation verification. This section is designed for the systems programmer responsible for installing and customizing the XPAF software.
- [\*Section Three: Managing Resources with XPAF\*](#) describes how to load, create, convert, and update XPAF resources. This section is intended for the system administrator who will be responsible for managing and maintaining XPAF system resources.
- [\*Section Four: Printing Documents with XPAF\*](#) describes how to print line-mode, DJDE, XES, page-formatted, AFP, pass-through, and VIPP documents. This section is intended for the systems programmer, application programmer, or anyone who needs to print documents with XPAF.
- [\*Section Five: XPAF Parameter and Keyword Reference\*](#) describes the initialization parameters, printer profile parameters, and JCL keywords available to tailor an XPAF system, printer, or job to your specific needs. This section is intended for the systems programmer, application programmer, or anyone who needs to print documents with XPAF.

- [Section Six: XPAF Messages](#) explains the informational, warning, and error messages that XPAF issues. This section is intended for systems programmers or application programmers who must reference messages sent to the XOAF or XOSF log files.
- [Section Seven: XPAF Operator Guide](#) describes the JES2, JES3, XPAF-exclusive, and XDS-exclusive commands available to a host console operator when printing with XPAF. This section is intended for console operators, system administrators, systems programmers, and any other personnel interested in the operator commands for XPAF.
- [Section Eight: Xerox Page Format Editor User Guide](#) describes how to create and maintain page formats using XPAF facilities. This section is intended for anyone who wants to format line-mode data streams that are printed through XPAF.
- [Section Nine: Appendices](#) provides instructions on using the LDMUTIL utility to define and initialize your native resource libraries and sample JCL to use for uploading resources from a tape to the host system. It also identifies the initialization and printer profile parameters related to managing resources.
- [Section Ten: Glossary](#) provides a glossary of the terms used within the documentation as they relate to XPAF.
- [Section Eleven: Index](#) contains indexed information to help you locate specific topics.

In addition to this documentation, two reference cards are provided:

- *XPAF TSO/Batch Commands Quick Reference Card* identifies the XOAF commands available to manage XPAF resources using TSO/batch commands. This card is intended for systems programmers, system administrators, or any other personnel interested in executing XOAF utilities through TSO/batch commands rather than through the XOAF panels.
- *Xerox Page Format Editor Quick Reference Card* provides an overview of the procedures used in creating and generating a page format via the Xerox page format editor. This card is intended for application programmers who code page-formatted data streams through XOAF.

## Conventions used

---

General conventions are used for these elements:

- Notes
- Cautions
- Messages
- JCL
- Screen panels
- Parameters, keywords, and commands
- Library, dataset, and DD names
- Sample data

Each element is described below.

### Notes

---

A note is a hint that assists you in performing a task or understanding the text.



**NOTE:** For greater emphasis, notes appear in blue text.

---

### Cautions

---

A caution notifies you that an action or omission may result in damage to your equipment, software, or data.



**CAUTION:** For greater emphasis, cautions appear in red text.

---

### Messages

---

Messages displayed on the console are presented in uppercase, nine-point Monotype.com font. For example:

```
XDI 3514I  XOSF SYSTEM SMF RECORDING TURNED OFF
```

### JCL

---

JCL listings and console displays longer than five lines are enclosed in shaded frames similar to this example:

```
//job-name JOB job-information
//LDMINI T   EXEC PGM=LDMUTIL, REGION=2048K
//STEPLI B   DD   DSN=library-name, DISP=SHR
//SYSPRI NT  DD   SYSOUT=A
//LDMPRI NT  DD   SYSOUT=A
//LDMPARM    DD   *
INI TI ALI ZE library-name
```

These conventions are used in JCL definitions:

- Constant data is shown in uppercase type. You must code constant data exactly as shown.
- Variable data is shown in lowercase, italicized type. Replace the italicized variables with your site's values.

## Screen panels

Information displayed on an ISPF panel is enclosed in a frame similar to this example:

**Xerox Output Administrative Facility**  
**Load Centralized Forms to a Native Library**

COMMAND ==>>

**I NPUT**  
Dataset Name:  
Member Name:

**OUTPUT**  
Dataset Name:  
Member Name:

Partial panels that show sample field entries appear between double lines similar to this example:

---

Unit Measure: **I N**

LPI: **6**

	I NPUT		OUTPUT		PRI NT			
OPTI ON	START	LENGTH	ACROSS	DOWN	DI R	FONT	COLOR	CONSTANT
—	1__	6__	. 3__	1. 1__	A	_____	DEF	N
—	1__	6__	. 7__	8. 92__	A	_____	DEF	N
—	9__	29__	1. 0__	1. 1__	A	_____	DEF	N
—	9__	29__	1. 8__	8. 4__	A	_____	DEF	N

---

## Parameters, keywords, and commands

These conventions are used in the syntax definitions for initialization parameters, printer profile parameters, IBM JCL keywords, XPAF extended JCL keywords, TSO/batch commands, and operator commands.



**NOTE:** Commas and parentheses are part of a statement's definition and must be included exactly as indicated.

Table 1-1. Syntax conventions

Convention	Description	Example			
Required text	Uppercase indicates text that must be entered exactly as shown.	FONTLIB=CFONTLIB			
Variable text	Lowercase italics represent an entry for which you must supply a value.	OPHLQ= <i>prefix</i>			
Numeric variable	A lowercase italicized “ <i>n</i> ” indicates a numeric variable. The number of <i>n</i> ’s shown represents the maximum positional value of the numeric variable.	CONROUTE= <i>nnn</i>			
Abbreviation	Characters in small capital letters are optional and can be abbreviated. In this example, the value EBCDIC can be abbreviated as E.	MODE=EBCDIC			
No entry needed	The word “blank” indicates that a blank (that is, no value) is an acceptable value.	IMAGEOUTIMP=blank			
Select an entry from a list	Braces { } indicate that one of the enclosed vertically-stacked items is required.	DEFLINE= <table border="0"> <tr> <td style="font-size: 3em; vertical-align: middle;">{</td> <td style="text-align: center; padding: 0 10px;">           LINE            DJDE            PAGE         </td> <td style="font-size: 3em; vertical-align: middle;">}</td> </tr> </table>	{	LINE DJDE PAGE	}
{	LINE DJDE PAGE	}			
Optional entry	Square brackets [ ] indicate that the enclosed text is optional.	OPWRITER=(DISK[,ONLY])			
Multiple values	An ellipses (...) indicates that the preceding item can be repeated. In this example, as many as eight colors can be specified.	COLORIMG=( <i>color1</i> [,..., <i>color8</i> ])			

## Library, dataset, and DD names

---

Library names are referenced by their low level qualifier only, not their full dataset name (for example, XPFSAMP). Add the high level qualifier used at your site to determine the full dataset name of a library reference.

Dataset names can be 1- to 44-characters long. Unless otherwise noted, dataset names and member names must follow standard MVS naming conventions.

XPAF uses several initialization and printer profile parameters that name DD statements in your XOSF start-up proc. These parameters' default values match the low level qualifier names for the datasets to which they point. For example, by default the PAPTBLDD initialization parameter names the TABLELIB DD statement that points to the *prefix*.TABLELIB dataset.

You may change any of the supplied DD names and dataset names in your XOSF start-up proc. However, when describing a native library, the XPAF documentation references the default name. So, if you have changed the default dataset name, substitute your library name for the library name in the XPAF documentation. Refer to [Section Five: XPAF Parameter and Keyword Reference](#) for detailed description of these parameters.

## Sample data

---

Sample JCL, messages, reports, and IVPs shown within this document reference a fictional company, Rainbow Office Supplies, its employees, and its customers. Rainbow Office Supplies, its logo, the names of its employees and customers, and any data used in the examples are fictitious. Any similarity to actual companies or persons is purely coincidental.

## Supported printers

XPAF supports these printer types:

- Centralized printers are high-volume printers, which are either channel-attached or remotely attached to the host. Channel-attached printers are directly attached to a host computer by input/output channels. Remotely-attached printers are physically connected to a host computer via a telecommunications line.

Centralized printing also may be referred to as Xerox Production Print Mode (XPPM). A 4235 printer running in XPPM mode is considered a centralized printer. Centralized printers also are referred to as LCDS, DJDE, or Metacode printers.

- Decentralized printers are low-volume printers, which are typically attached to the host through remote communication lines.

Decentralized printing also may be referred to as XES (Xerox Escape Sequence) or Xerox Distributed Print Mode (XDPM) printing. A 4235 printer running in XDPM mode is considered a decentralized printer.

- PCL-capable printers are mid-volume printers, which are generally remotely-attached to the host.

A 4235 printer running in HP Laserjet IID emulation is considered a PCL-capable printer. A 4700 II or 4213 printer running in HP Laserjet IIID emulation is considered a PCL-capable printer.

- VIPP-enabled printers are print devices on which VIPP software resides. VIPP documents must be sent to a VIPP-enabled print device.

Table 1-2. XPAF-supported Xerox printers

Printer Model		
Centralized	Decentralized	PCL-capable
9790 9700 8790 8700	4700 II 4213 II 4197 MICR 4045 4030 II 3700	4900 4700 II 4230 MRP 4220 MRP 4219 MRP 4215 MRP 4213 II
		DC 265LP DC 255LP

Table 1-2. XPAF-supported Xerox printers (Continued)

Printer Model		
Centralized	Decentralized	PCL-capable
DP 4890 LPS DP 4850 LPS DP 4650 LPS DP 4635 LPS DP4635MX LPS DP 4235 LPS (in XPPM mode) DP 4135 LPS DP 4090 LPS DP 4050 LPS DP 180 EPS DP 180 LPS DP 96 LPS DP 92C LPS.	DP 4235 LPS	DP 4890 NPS DP 4850 NPS DP 4635 NPS DP 4517 DP 4512 DP 4508 DP 4235 LPS DP 4090 NPS DP 4050 NPS DP 180 EPS DP 180 NPS DP 155 NPS DP 115 NPS DP 100 NPS DP 96 NPS DP 92C NPS DP 65 DP C55 DP N40 DP N32 DP N24
		DT 6180 DT 6155 DT 6135 DT 6115 DT 6100
		Phaser 850DP Phaser 750DP

### *Limitations of support*

XPAF supports up to 64 Xerox centralized, decentralized, and PCL-capable printers per functional subsystem (FSS).

The capabilities of XPAF are limited to the functional abilities of the printer. For example, if a printer does not support duplex printing, XPAF cannot duplex a document sent to that printer.

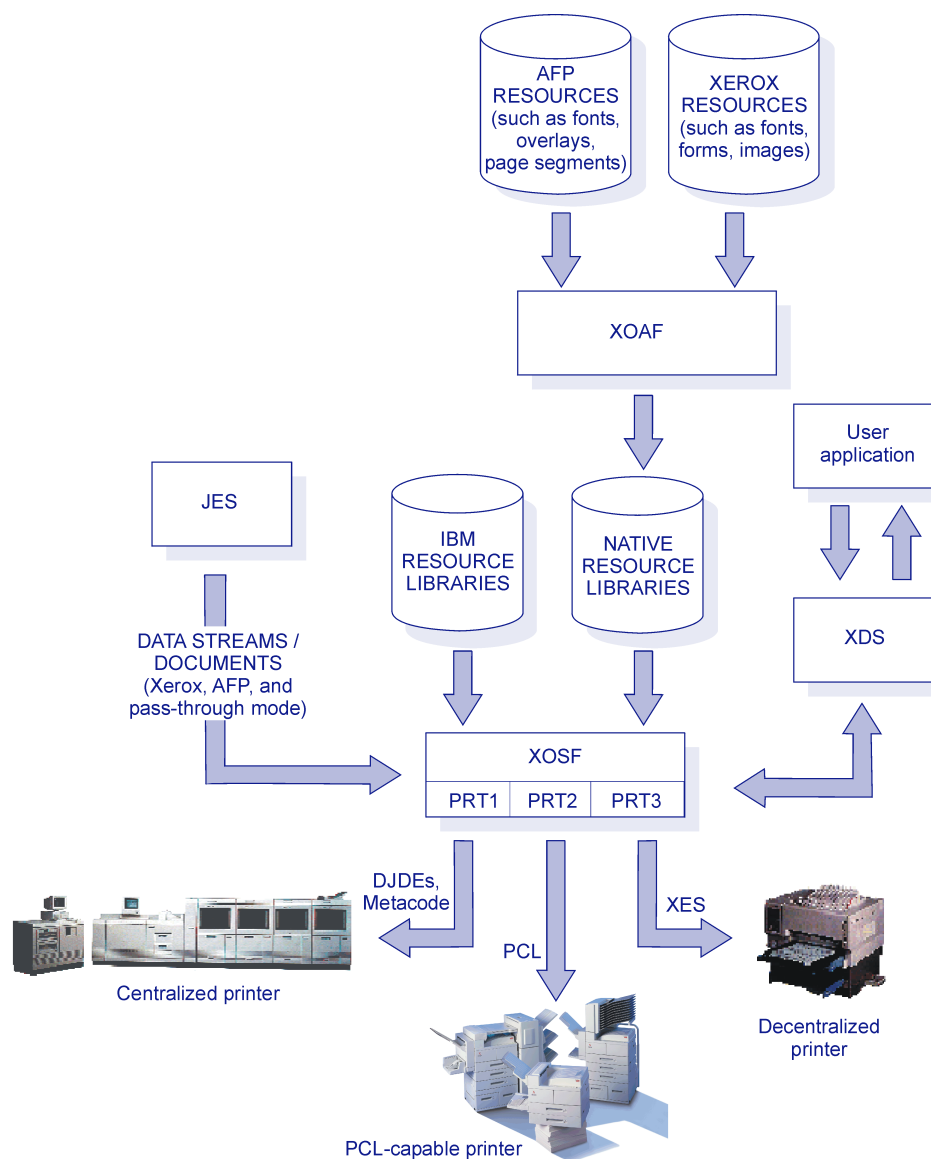
## XPAF subsystems

XPAF is composed of two subsystems:

- Xerox Output Administrative Facility (XOAF)
- Xerox Output Services Facility (XOSF)

Figure 1-1 provides an overview of the relationship of the two subsystems.

Figure 1-1. XPAF subsystems



## Xerox Output Administrative Facility

---

XOAF contains the functions and utilities that you use to prepare the resources and supporting lists and tables needed during the printing operation. Resources are fonts, forms, images, or logos that are required, in addition to data, to print a document. A resource can be stored either on the printer, in a library on the host, or inline in the data stream.

For more information about using XOAF utilities, refer to [Section Three: Managing Resources with XPAF](#).

## Xerox Output Services Facility

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XOSF interfaces with MVS to accept documents from JES, convert them into a format suitable for the intended printer, and transmit them to the printer.

XOSF provides these functions:

- Host system interface
- Document processing
- Document transmission and printing

### Host system interface

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XOSF interfaces with the host-resident MVS operating system to accept documents from JES. XOSF operates as an MVS-based functional subsystem (FSS) to obtain a data stream from the JES spool and maintain control of the printer. Additionally, you can install XDS to invoke XOSF directly without JES or any other spooling subsystem.

For the host console operator, the interface to Xerox printers through XOSF remains the same as JES-controlled printers. For example, an operator can start, stop, and interrupt a printer. The operator also can use operator commands unique to XPAF to make inquiries to the system for status, state, and activity levels. For more information refer to [Section Seven: XPAF Operator Guide](#).

### Document processing

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XOSF document processing is governed by the type of data stream and the type of printer selected for printing. The supported data streams are discussed later in this chapter. The supported printers are discussed in [Section Two: Installing and Customizing XPAF](#).

In most cases, XOSF performs a process called resource conditioning. This process ensures that all resources required to print the document are available before sending the data stream to the printer.

During XOSF processing, some data streams may require a conversion of the print commands to a format recognized by the Xerox printer. Depending on the data stream type being processed and the printer being used, a data stream may be converted into one of the following kinds of Xerox data streams:

- Metacode data streams for printing on centralized printers. A Metacode data stream consists of ASCII print records that include carriage control commands, along with special codes known as

metacodes, to define absolute positioning, orientation, and font indexing.

- XES data streams for printing on decentralized printers. XES control codes are prefixed by a user-defined key which signals the printer to recognize the character or characters that follow it as an escape sequence.
- PCL data streams for printing on PCL-capable printers. PCL data streams contain characters called escape sequences which signal the printer to recognize the character or characters that follow it as a print command.

If a document already is formatted for the data stream type required by the printer, conversion is not required. XPAF can send this type of data stream directly to the printer after resource conditioning is complete. This is known as native mode processing.

Other data streams can be sent to the printer without conditioning or conversion. This is called pass-through processing. For example, an XES document that does not require resource conditioning can be sent directly to a decentralized XES printer without XPAF altering the data stream.

For more information about document processing, refer to [Section Four: Printing Documents with XPAF](#).

## *Document transmission*

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After XOSF performs any necessary conversions and resource conditioning, XOSF sends the document and tailored printer instructions to the printer.

## Supported data streams

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XPAF accepts these types of data streams:

- Line-mode
- DJDE
- XES
- Page-formatted
- AFP
- VIPP
- Other (in pass-through mode)

XPAF's data stream support is summarized by printer type in the table below and discussed on the pages that follow. Refer to [Section Four: Printing Documents with XPAF](#) for detailed information about how XPAF processes each data stream type.

Data stream type	Centralized printers	Decentralized printers	PCL-capable printers
<b>Line-mode</b>	YES	YES	YES
<b>DJDE</b>	YES	YES <sup>1</sup>	YES <sup>1</sup>
<b>XES</b>	NO	YES	YES <sup>1</sup>
<b>Page-formatted</b>	YES <sup>1</sup>	YES <sup>1</sup>	YES <sup>1</sup>
<b>AFP</b>	YES <sup>1</sup>	YES <sup>1</sup>	YES <sup>1</sup>
<b>VIPP</b>	NO	NO	YES <sup>2</sup>
<b>Other (in pass-through mode)</b>	NO	YES <sup>3</sup>	YES <sup>3</sup>

<sup>1</sup> Requires conversion.

<sup>2</sup> Requires a VIPP-enabled printer.

<sup>3</sup> Pass-through data streams are neither converted nor conditioned.



**NOTE:** You can enhance the look of your data streams by using XPAF extended JCL to add print formatting commands and selecting XPAF options at the time that your print job executes. XPAF provides extended JCL keywords for use with most of the supported data streams. For detailed information about the extended JCL keywords available, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

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## Line-mode data streams

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Line-mode (or 3211) data streams consist only of carriage control commands and data. You can send line-mode data streams through XPAF to any supported centralized, decentralized, or PCL-capable printer.

If you enhance the look of your line-mode data streams by using extended JCL keywords, XPAF no longer considers the data stream as a line-mode data stream. XPAF will process it as the relevant data stream type.

## DJDE data streams

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DJDEs are control statements that specify how a document should be printed on a centralized printer. DJDE processing enables certain printer parameters to be changed from one job, page, or record boundary to the next. For example, you can use the COPIES DJDE to specify the number of copies of a report to be printed.

You can generate DJDE data streams in one of two ways:

- Format a line-mode data stream using standard IBM and XPAF extended JCL.
- Code DJDEs directly in a data stream or use an application to produce a data stream containing DJDEs. In addition, you can modify the initial DJDE packet using standard IBM and XPAF extended JCL.

You can print DJDE documents on centralized, decentralized, and PCL-capable printers. During document processing, XPAF uses extended JCL keywords to insert DJDEs. The document is then conditioned and processed as follows:

- If the document is sent to a centralized printer, no further processing is required.
- If the document is sent to a decentralized printer, XPAF converts the DJDE commands to XES commands.
- If the document is sent to a PCL-capable printer, XPAF converts the DJDE commands to XES commands, then converts the XES commands to PCL commands.

## XES data streams

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XES data streams contain printer commands prefixed with user-defined keys which dynamically change parameters for decentralized printers. You can print XES documents on decentralized and PCL-capable printers.

- If the document is sent to a decentralized printer, XPAF accepts the escape sequences and sends them to the printer without conversion.
- If the document is sent to a PCL-capable printer, XPAF converts the XES commands to PCL commands before sending the document to the printer.

## Page-formatted data streams

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Page-formatted data streams are line-mode data streams that have been formatted using a Xerox page format. You can print page-formatted documents on centralized, decentralized, or PCL-capable printers.

- If the document is sent to a centralized printer, XPAF converts the page format settings to Metacode commands.
- If the document is sent to a decentralized printer, XPAF converts the page format settings to XES commands.
- If the document is sent to a PCL-capable printer, XPAF converts the page format settings to XES commands, then converts the XES commands to PCL commands.

## AFP data streams

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AFP data streams can consist of:

- Sequences of variable-length records called structured fields
- Fixed- or variable-length records that contain both line-mode data and structured fields
- Line-mode data formatted using AFP JCL keywords

You can print AFP documents on centralized, decentralized, or PCL-capable printers.

- If the document is sent to a centralized printer, XPAF converts the AFP commands to Metacode commands.
- If the document is sent to a decentralized printer, XPAF converts the AFP commands to XES commands.
- If the document is sent to a PCL-capable printer, XPAF converts the AFP commands to XES commands, then converts the XES commands to PCL commands.

## VIPP data streams

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Variable Intelligent PostScript Printware (VIPP) data streams are line-mode data streams that have VIPP commands inserted at the beginning of the application. VIPP applications are sent to a VIPP-enabled printer for processing.

## Data streams in pass-through mode

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You can send a data stream specifying pass-through mode to any XPAF-supported decentralized, or PCL-capable printer if the printer supports the printer command language of the data stream. For example, the data stream for a PCL document does not require a print command conversion by XPAF before being sent to a PCL-capable printer.

XPAF does not perform any conversion, conditioning, or validation on resources included in a pass-through document. All of the information required to print the document must be contained within the data stream because the data stream is sent directly to the printer without being altered.



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**CAUTION:** Unpredictable results may occur when:

- printing a pass-through document through XPAF to a non-Xerox printer
  - a pass-through data stream contains commands that are not supported by the target printer.
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## Parameter and keyword processing hierarchy

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XPAF allows you to tailor your printing environment by providing control at three levels: system, printer, and job.

Level	Description
<b>System</b>	XPAF provides control at the system level through the use of required initialization parameters. Initialization parameters specify MVS and JES information, DD statement names, DJDE formats and defaults, and other processing options.
<b>Printer</b>	XPAF provides control at the individual printer level through the use of printer profile parameters.
<b>Job</b>	XPAF provides control at the job level through the use of two types of keywords: <ul style="list-style-type: none"><li>• Standard IBM JCL keywords that are supported by XPAF</li><li>• Extended JCL keywords that are unique to XPAF and establish job- and output-specific values</li></ul>

During XPAF processing, printer profile parameters override initialization parameters, and extended JCL keywords override initialization and/or printer parameters.

Processing also can be affected by printer settings, specified JDL, and settings in the JES parameters or XOSF start-up proc. For more information refer to [Section Five: XPAF Parameter and Keyword Reference](#).