

# *Section Two:*

## *Installing and Customizing XPAF*

This section is a programming guide for installing XPAF in an IBM MVS environment. Written for systems programmers, it provides step-by-step instructions for installing and customizing the XPAF system.

XPAF installation procedures are described in sequential order. Whether you are installing XPAF for the first time or reinstalling XPAF, you should start at the beginning and proceed sequentially.

As the systems programmer responsible for installing and customizing the XPAF system software, you should have experience installing host software products. You also should have experience using Xerox printers.





## 2. *Installation requirements*

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This chapter describes the hardware and software required to install and use XPAF successfully. It addresses these topics:

- Installation materials
- SMP/E level
- Hardware
- Printer support
- IBM host requirements



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**NOTE:** Because XPAF may have some module names that are common with other Xerox host software products, you must install XPAF in its own CSI.

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### *Installation materials*

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The XPAF installation materials include:

- An installation service macro tape
- A base product tape
- Resource tapes

The installation service macro tape contains the macros used for installing XPAF. The base product tape contains the SMP/E MCS file which provides product functions.

Refer to “[Resource installation tape content](#)” in chapter 4, “[Installing resources](#)” for a list of the resource tapes and their contents.

### *Media*

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The XPAF 3.0 software is shipped on standard label 3480 cartridge tapes. The tape is in IBM SMP/E-format.

### *Content*

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The installation macro tape contains one file, Installation Service Macros. This file is an IEBCOPY file with RECFM=VB. The block size for this file is determined by IEBCOPY.

The product base tape contains one file, XPAF 3.0 MCS. The file has these characteristics:

- RECFM=VS
- LRECL=27936
- BLKSIZE=27940

## SMP/E level

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You must install XPAF using SMP/E Release 5 or higher.

## Hardware

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XPAF operates on any processor capable of running MVS.

### Disk allocation

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If you load both the centralized and decentralized libraries onto your system, XPAF needs approximately 640 cylinders on single density 3380 disk drives. XPAF uses the storage as follows:

XOAF/XOSF	1220	
SMP/E files	621	
Resources	7759	(AFP and native mode)
Total tracks	9600	(640 cylinders)

Tables 2-1 through 2-3 show the approximate minimum space requirements for all of the files created and used during XPAF installation. The space figures shown in these tables reflect installation on single density 3380 disks and may vary according to your DASD type. You may increase any of these values based on your site's installation and environment.

Table 2-1. XPAF SMP/E installation library requirements

Dataset name	DSORG	Tracks (approx.)	RECFM	LRECL	BLKSIZE
CSI	VSAM	63	V	24 – 143	22528 (CISZ)
SMPLOG	PS	60	VB	510	3200
SMPLOGA	PS	20	VB	510	3200
SMPMTS	PO	26	FB	80	27920
SMPPTS	PO	402	FB	80	27920
SMPSCDS	PO	60	FB	80	27920
SMPSTS	PO	20	FB	80	27920

Table 2-2. XPAF target, distribution, and operational library requirements

Dataset name	DSORG	Tracks (approx.)	RECFM	LRECL	BLKSIZE
AXPFCLIB	PO	28	FB	80	27920
AXPFLOAD	PO	377	U	—	6144
AXPFMAC	PO	60	FB	80	27920
AXPFMLIB	PO	8	FB	80	27920
AXPFPLIB	PO	64	FB	80	27920
AXPFSAMP	PO	132	FB	80	27920
AXPFSLIB	PO	8	FB	80	27920
INSTLIB	PO	45	FB	80	27920
STAGE2	PO	30	FB	80	27920
XINPARM	PO	4	FB	80	27920
XOAFLOG	PS	3	VB	256	27998
XOSFLOG	PS	5	VB	256	27998
XPFCCLIB	PO	28	FB	80	27920
XPFLLOAD	PO	221	U	—	23200
XPFLPA	PO	14	U	—	23200
XPFMAC	PO	15	FB	80	27920
XPFMLIB	PO	8	FB	80	27920
XPFLPLIB	PO	64	FB	80	27920
XPFSAMP	PO	132	FB	80	27920
XPFSLIB	PO	8	FB	80	27920
XPFTOOLS	PO	11	FB	80	27920

Table 2-3. XPAF resource file requirements

Dataset name	DSORG	Tracks (approx.)	RECFM	LRECL	BLKSIZE
AFPFONTS	PO	78	VBM	8205	27998
CFONTLIB	VSAM <sup>1</sup>	2925	N/A	4089	4096 (CISZ)
CFORMLIB	VSAM	30	N/A	4089	4096 (CISZ)
CIMGLIB	VSAM	135	N/A	4089	4096 (CISZ)
CLOGOLIB	VSAM	7	N/A	4089	4096 (CISZ)
DFONTLIB	VSAM	2925	N/A	4089	4096 (CISZ)
DFORMLIB	VSAM	28	N/A	4089	4096 (CISZ)
DIMGLIB	VSAM	120	N/A	4089	4096 (CISZ)
IVPDATA	PO	10	FBA	172	27864
IVPRESC	PO	7	VBM	8205	27998
IVPXOAF	PO	3	FB	128	27904
PAGEFORM	PO	14	VBM	8205	27998
PDLLIB	VSAM	13	N/A	2041	2048 (CISZ)
PFONTLIB	VSAM	1260	N/A	4089	4096 (CISZ)
PFORMLIB	VSAM	4	N/A	4089	4096 (CISZ)
PIMGLIB	VSAM	30	N/A	4089	4096 (CISZ)
TABLELIB	VSAM	255	N/A	4089	4096 (CISZ)
XWRLIB	VSAM	6	N/A	2041	2048 (CISZ)

<sup>1</sup> IDCAMS allocation for native VSAM files, used to store native resources, must meet these requirements:

VSAM files must be allocated in records.

The maximum number of records allowed in a VSAM file is 524,280.

VSAM files may span multiple volumes and extents.

Once a VSAM file is initialized, no secondary extents or additional candidate volumes can be acquired.

The CISZ must be one of these values: 512, 1024, 2048, or 4096.

The RECSIZ must be 7 less than the CISZ: 505, 1017, 2041, or 4089.

A sample IDCAMS allocation statement is shown in figure 2-1. For additional information concerning IDCAMS, refer to your IBM DFP product guides.

Figure 2-1. Sample IDCAMS statement for allocation

```
DEFINE CL (NAME(dataset-name)) -  
      REC(26214) VOL(VOL001 VOL002) -  
      NIXD SPEED SHR(3 3) RECSZ(4089 4089) CISCZ(4096)) -  
      DATA (NAME(dataset-name.DATA))
```



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**NOTE:** The NIXD (nonINDEXed) and SHR (SHARE OPTIONS) parameters are required in the IDCAMS statements. The SHR option indicates that there may be multiple volumes of resources.

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## Printer support

XPAF supports centralized, decentralized, and PCL-capable printers. The tables in this section provide the minimum supported software release levels for centralized printers, decentralized printers, PCL-capable printers, and interface devices.

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

### Centralized printers

This table lists the minimum supported release levels for centralized printers.



**NOTE:** Throughout this document, references made to highlight color printers refer to the 4890 and 4850 printers. Note that the 4890 NPS and 4850 NPS printers do not support highlight color when printing from XPAF.

Printer	Minimum software levels
9790/8790	V2.1
9700/8700	V10.0 (no XNS support)
4890/4850	V3.7/V4.0
4650/4090/4050	V2.1 (with the HIP52.TSK file and required XPAF patches) V3.5 (latest patch level) plus any XPAF-specific patches V3.0 (without XNS support)
4635	V3A
4635MX	V3A
4235 (XPPM mode)	V1.2B31C
4135	V3.6
180 EPS	V1.10
180 LPS	V3C2 Release 1.4
96 LPS	V3A
92C LPS	V5.4

## Image requirements for centralized printers

To print images such as line art and photographs, centralized printers must be equipped with the Xerox Graphics Handling Option subsystem or Graphics Video Generator.

To print AFP and Xerox images such as page segments, overlays with shading, and .IMG resources, all centralized printers must be equipped with additional graphics processing memory. Depending on printer model and operating system, centralized printers must be equipped with one of three Xerox graphics processing memory options:

- Graphics Handling Option (GHO)
- Graphics Video Generator (GVG)
- Graphics Video Generator II (GVGII)

The extra graphics memory is required because of the way XPAF processes and transforms data streams that contain AFP and Xerox images.

GHO, GVG, and GVGII consist of hardware, accompanying firmware, and software. These options enable centralized printers to store, merge, and print AFP and Xerox images in a text document at 300 dpi. Different memory options are available, depending on your printer model:

- Two GHO memory options are available for the 9790, 9700, 8790, 8700, 4090, and 4050: either 2 or 8 megabits.
- Two GVG memory options are available for the 4650, 4135, and 4090: either 32 (option package 38P) or 256 megabits (option package 39P).
- Two levels of GVGII memory are available for the 4850: either 32 or 256 megabits.

The larger memory options are recommended for printing documents that contain complex images or large numbers of images per page.

The printer's operating system provides support for the various graphics memory options. For detailed information about graphics memory options for a specific printer, contact your local Xerox representative.

If your printer is equipped with any of the three graphics memory options, you must specify GHO in the FEATURE printer profile parameter to indicate that the printer has additional graphics memory. For information about the FEATURE printer profile parameter defaults, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

## Decentralized printers

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This table lists the minimum supported release levels for decentralized printers.

Printer	Minimum software levels
4700 II	D2.0-89
4235 (XDPM mode)	V1.2 B31C
4213 II	V2.0L
4197 MICR	V3.05
4045 Model 20/120	V4.2.0 (US) V4.2.1 (International)
4045 Model 50/150	V3.2
4030 II	V1.22
3700	V2.5-10 V5.2 (with patch level 40 or higher)

## Graphics cartridges

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The 4045 printer requires the XGRAPH graphics cartridge for mosaic graphic support. No other decentralized printers require graphics cartridges.

## Software emulation modes

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For all decentralized printers, XPAF supports XES emulation mode. For decentralized printers that support PCL processing, XPAF also supports PCL emulation mode.

## PCL-capable printers

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This table lists the minimum supported release levels for PCL-capable printers.

Printer	Minimum software levels
6100	V1.3
6115	V1.3
6135	V1.3
6155	V1.3
6180	V1.3
4215	V2013.109
4219	V2013.109
4220	V2013.115
4230	V2013.115
4508	VM
4512	VM
4517	V1.00.56-0075
4900	V2013.115
4050 NPS	V1.4
4090 NPS	V1.4
4213 II (HP Laserjet IIID mode)	V2.0L
4235 (HP Laserjet IID mode)	V1.6
4635 NPS	V1.4
4700 II (HP Laserjet IIID mode)	D2.0-89
4850 NPS	V1.4
4890 NPS	V1.4
180 EPS	V1.10
180 NPS	V1.4
155 NPS	V1.7
115 NPS	V1.7

Printer	Minimum software levels
100 NPS	V1.7
96 NPS	V1.5
92C NPS	V5.4
DocuPrint C55	V3.3.4
Document Centre 265LP	V0.17.9.32
Document Centre 255LP	V0.17.9.32
DocuPrint N40	V1.01
DocuPrint N32	V1.01
DocuPrint N24	V1.14
DP 65	V1.0
Phaser 750DP	V2.28
Phaser 850DP	V2.16

### Software emulation modes

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For all PCL-capable printers, XPAF supports PCL emulation mode. For PCL-capable printers that also support HPGL, PostScript, and XES, XPAF supports those emulation modes only when printing pass-through documents.

For more information on the various printer command languages supported by each printer, refer to chapter 11, [“XPAF printer support.”](#)

## Printer connectivity

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Protocol converters, interface controllers, and communication modules allow connectivity between the XPAF host system and remotely-attached printers. This table lists the minimum software release levels for the interface devices supported by XPAF.

Interface devices	Minimum software levels
AGILE 6287Ultra interface controller	V40.7
AGILE 6287 ALLY interface controller	V5.19
AX-7 Cobra+ protocol converter	V1.00
i-data 3270 C/RS protocol converter	V121.010
i-data Coax PCL interface card	V116.020
MPI Technologies AT02G printer adapter	V2016
MPI Technologies CTY-2 printer adapter	V5.01
Xerox /4 interface controller	V12.181.02
Xerox /4X interface controller	V17.04
Xerox 271 Communication Module	V3.0
Xerox 274 interface controller	MB-0013*DB-0022
Xerox 4045 Model 20 interface controller	V4.2.0 (US) V4.2.1 (International)
Xerox 4045 Model 120 interface controller	V4.2.0 (US) V4.2.1 (International)
Xerox 871 Communications Module	V3048-03
Xerox Coax/Twinax Option (XCTO)	V1.4 (4213 I) V2.0M (4213 II)
Xerox DocuPrint network interface card (NIC)	V4.12

Refer to the chapter 13, "[Setting up decentralized printers](#)" and chapter 14, "[Setting up PCL-capable printers](#)" for more information about the interface devices that are supported for each decentralized and PCL-capable printer.

## IBM host requirements

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To install and run XPAF, your host operating environment must include specific software products at supported release levels.

### Operating environments and JES levels

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XPAF operates in all IBM-supported MVS and OS/390 JES2 and JES3 environments. When new host operating environments are released, XPAF will be updated to ensure compatibility. Conversely, when IBM withdraws support for a software release level, Xerox also will withdraw support for that release level. Contact your local Xerox representative or review the bulletin accompanying your latest maintenance tape to verify specific supported release levels.

### Host maintenance requirements

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Review this table to determine if you need to apply any of these IBM maintenance updates to your system.

If you use this version and subsystem:		Apply these:	
Version	Subsystem	APAR	PTF
OS/390 1.1.0	JES2 1.1.0	OW17135	UW24433
		OW17462	UW24590
		OW17571	UW26365
		OW21858	UW31020
		OW23001	UW35475
		OW25337	UW38925
		OW26977	UW40213
		OW28477	UW40999
		OW29852	UW44894
		OW30704	UW44717
	JES3 1.1.0	OW17512	UW24542
		OW29852	UW44894

If you use this version and subsystem:		Apply these:	
Version	Subsystem	APAR	PTF
OS/390 1.2.0	JES2 1.1.0	OW23001	UW35475
		OW25337	UW38925
		OW26977	UW40213
		OW28477	UW40999
		OW29852	UW44894
		OW30704	UW44717
	JES3 1.1.0	OW29852	UW44894
OS/390 1.3.0	JES2 1.3.0	OW23001	UW35476
		OW25209	UW38705
		OW25337	UW38926
		OW26018	UW37928
		OW26977	UW40215
		OW27503	UW39327
		OW27945	UW39944
		OW28477	UW41000
		OW29852	UW44895
		OW30089	UW43526
		OW30704	UW44719
	JES3 1.3.0	OW29852	UW44895

If you use this version and subsystem:		Apply these:	
Version	Subsystem	APAR	PTF
OS/390 2.4.0	JES2 2.4.0	OW25209	UW38706
		OW25337	UW38927
		OW26018	UW37929
		OW26977	UW40217
		OW27503	UW39328
		OW27945	UW39945
		OW28477	UW41001
		OW29852	UW44896
		OW30089	UW43527
		OW30704	UW44722
		OW34837	UW52803
	JES3 2.4.0	OW29852	UW44896
OS/390 2.5.0	JES2 2.5.0	OW29852	UW44897
		OW30089	UW43528
		OW30704	UW44720
		OW34837	UW52803
	JES3 2.5.0	OW29852	UW44897
OS/390 2.6.0	JES2 2.5.0	OW34837	UW52803
	JES3 2.6.0	no additional APAR required	no additional PTF required
OS/390 2.7.0	JES2 2.7.0	OW38783	UW59964
	JES3 2.6.0	no additional APAR required	no additional PTF required
OS/390 2.8.0	JES2 2.8.0	no additional APAR required	no additional PTF required
	JES3 2.8.0	no additional APAR required	no additional PTF required

If you use this version and subsystem:		Apply these:	
Version	Subsystem	APAR	PTF
OS/390 2.9.0	JES2 2.8.0	no additional APAR required	no additional PTF required
	JES3 2.9.0	no additional APAR required	no additional PTF required
OS/390 2.10.0	JES2 2.10.0	no additional APAR required	no additional PTF required
	JES3 2.10.0	no additional APAR required	no additional PTF required

## *IBM host products*

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These IBM host software products may be installed on your system.

## *Printer application products*

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XPAF can print applications created by these products at the specified minimum release levels:

- DCF Version 1.3.1
- GDDM Version 2.1
- PMF Version 1.1.0
- PPFA Version 1.1.0

## *System application products*

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XPAF can coexist with these products at the specified minimum release levels:

- DFP Version 2.3.0
- ISPF Version 2.3
- NCP Version 2
- NTO BSC 3780 Version  
(required to use XPAF with VTAM bisynchronous printers)
- TCP/IP Version 3.2.0
- TSO/E Version 1.4
- VTAM:
  - Version 2.1:
    - PTF — UZ71704 (APAR OZ77159)
    - PTF — UZ75791 (APAR OZ80058)
    - PTF — UZ79846 (APAR OZ83529)
  - Version 2.2:
    - PTF — UZ71705 (APAR OZ77159)
  - Version 3.3

## *Resource protection*

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If your site uses multiple operating systems with global resource sharing (such as shared DASD), you should provide some type of resource protection such as IBM's Global Resource Serialization (GRS) when using XPAF.

## Installation service macro worksheets

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Use these worksheets to build your installation service macro (ISM) definitions. ISMs are used to install the XPAF base product, XPAF resources, user exits, and XPAF maintenance software. All applicable parameters are required unless identified as optional.

Before you begin installing XPAF, record your site-specific values in these worksheets.

### #GENDFLT worksheet

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The #GENDFLT macro allows you to specify default values and other information that is used for various parameters of other installation service macros. The values you enter for the parameters in this macro become the default values when you leave those same parameters blank in other macros.

Macro	Parameter	Description	Site values
#GENDFLT	DUNIT	Default UNIT value for installation	
	DVOLSER	Default VOLSER of DASD device	
	HLQ	Optional. Default high-level qualifier for other ISM macros	
	LOADSIZE	Block size of execution libraries	
	OCLASS	Stage 2 print output class for statements sent to the printer	
	OPTIONS	Specify default options to use for installing XPAF	
	SMS	Optional. Default SMS Storage and/or Management Class for non-VSAM datasets	
	SMSVSAM	Optional. SMS Storage and/or Management Class for non-VSAM cluster definitions	
	SRCLIB	Optional. Dataset name of user-modifiable source	
	TAPEUNIT	Default tape unit	
	TSOBLKSZ	Optional. Block size for TSO datasets	

## #GENJBCD worksheet

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The #GENJBCD macro specifies job card values and optionally a JES2 JOBPARM card on all stage 2 jobs generated. This macro is optional and, if not included, the @JOB CARD member is used to generate job cards at the beginning of each stage 2 job.

All JOBCD and JOBPARM entries must begin and end with a single quote. If a quote is required within the text, it must be entered as two single quotes.

Macro	Parameter	Description	Site values
#GENJBCD	JOBCD1	Optional. Job card parameters for first job card	
	JOBCD2	Optional. Continued job card parameters from JOBCD1	
	JOBCD3	Optional. Continued job card parameters from JOBCD2	
	JOBNAME	Optional. JOB name for all job cards generated during stage 1	
	JOBOPT	Optional. Stage 1 macro options for generating JCL on stage 2 jobs	
	JOBPARM	Optional. JOBPARM card parameters for installation /*JOBPARM card	
	JOBVARY	Optional. Use a variable JOBNAME on each job of generated stage 2 JCL?	

## #GENJES worksheet

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The #GENJES macro generates the JES values (if applicable) used to create JES-specific samples and allocate installation SMP/E datasets.

Macro	Parameter	Description	Site values
#GENJES	JESFSSID	Optional. JES functional subsystem ID	
	JESMAC	Optional. Name of the IBM-supplied macro library name for JES	
	JESPROD	JES product used to install XPAF	
	JESUMAC	Optional. Library used to assemble JES source or exits	
	JESVER	JES release level	
	OS390	JES level being run on OS/390 host operating systems	

## #GENPROD worksheet

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The #GENPROD macro assigns values to required parameters to install XPAF. The values you enter for this macro are used to generate SMP/E jobs, XPAF sample parameters, and sample JCL.

Macro	Parameter	Description	Site values
#GENPROD	DUNIT	UNIT value for non-VSAM datasets	
	DVOLSER	VOLSER of DASD device	
	HLQ	Optional. Prefix for non-VSAM datasets	
	HLQLPA	Optional. XPFLPA high-level qualifier in Master Catalog	
	HLQMST	Optional. XPFLOAD and XPFLPA high-level qualifier in Master Catalog	
	OPTIONS	Specify installation options for XPAF	
	PRODUCT	Name of product being installed	
	PRODVRM	Version, release, and modification level for this product	
	SMS	Optional. Default SMS Storage and/or Management Class for non-VSAM datasets	
	SMSVSAM	Optional. SMS Storage and/or Management Class for non-VSAM cluster definitions	
	UMODJOFT	Optional. SMP/E name used to install JES offset table	

## #GENSMP worksheet

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The #GENSMP macro supplies the stage 1 SMP/E processing with user-specified values. These values help define and initialize the SMP/E structure and are used to maintain XPAF and its associated function.

Macro	Parameter	Description	Site values
#GENSMP	DUNIT	UNIT value for non-VSAM datasets	
	DVOLSER	VOLSER of DASD device	
	DWORK	UNIT value used for DWORK file allocation during SMP/E execution	
	HLQ	Prefix for non-VSAM datasets	
	HLQVSAM	Prefix for VSAM datasets	
	MTS	Include SYSTEM MTS in all MTS DD concatenations?	
	RELEASE	Current SMP/E release version	
	SMS	Optional. Default SMS Storage and/or Management Class for non-VSAM datasets	
	SMSVSAM	Optional. SMS Storage and/or Management Class for non-VSAM cluster definitions	
	USERHLQ	Prefix used for generation of SMP dataset names of USEROPT option 2 or 3 is selected	
	USEROPT	Level of allocation for required SMP/E datasets	
	VSMVOL	Use specified volume serial number for generated VSAM file definitions	

## #GENUXIT and #UEXIT worksheets

The #GENUXIT and #UEXIT macros create stage 2 jobs that use SMP/E to assemble and link your user-exit source code into the load library you specify that is accessible by XPAF. All information pertaining to your exits is entered in parameters of these macros.

Macro	Parameter	Description	Site values
#GENUXIT	UMPFX	Default SYSMOD ID prefix	
	USEC	Optional. Generate stage 2 for this exit?	
	USECLNKLB	Optional. Load library name linked by SMP/E to user security module	
	USECSMID	Optional. SYSMOD ID	
	UXLNKLB	Optional. Load library linked by SMP/E to exit modules	
	UXMAC	Optional. Defines user macro library	
	UXPFX	Optional. Default source member and load module name prefix	
	UXSRCLB	PDS library for exit source code	

#UEXIT Macro	Site value
#UEXIT	(01,)
#UEXIT	(02,)
#UEXIT	(03,)
#UEXIT	(04,)
#UEXIT	(05,)
#UEXIT	(06,)
#UEXIT	(07,)
#UEXIT	(08,)
#UEXIT	(09,)
#UEXIT	(10,)
#UEXIT	(11,)
#UEXIT	(12,)

#UEXIT Macro	Site value
#UEXIT	(30,)
#UEXIT	(31,)
#UEXIT	(32,)

## #GENEND worksheet

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The #GENEND macro specifies generation variables for XPAF, resource installation, and maintenance.

Macro	Parameter	Description	Site values
#GENEND	STAGE2	Optional. Place stage 2 jobs and control statements in INSTLIB?	
	TYPE	Type of stage 2 jobs to generate	

## #GENRSC worksheet

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The #GENRSC macro supplies the stage 1 processing with values needed to define, initialize, and load the XPAF resource files.

Macro	Parameter	Description	Site values
#GENRSC	DUNIT	UNIT value for non-VSAM datasets during resource allocation	
	DVOLSER	VOLSER of DASD device used to allocate XPAF resource files	
	HLQ	Prefix for all XPAF resource datasets during file allocation	
	HLQTAPE	Prefix for dataset names from resource tapes	
	HLQVSAM	Prefix used for all VSAM resource datasets during resource file allocation	
	IVP	Offload IVP datasets with other resource datasets	
	OPTIONS	Identify resource installation options	
	SIZCFONT	Specify the size of the CFONTLIB allocated by the resource allocation job	
	SIZCFORM	Specify the size of the CFORMLIB allocated by the resource allocation job	
	SIZCIMG	Specify the size of the CIMGLIB allocated by the resource allocation job	

Macro	Parameter	Description	Site values
#GENRSC (continued)	SIZDFONT	Specify the size of the DFONTLIB allocated by the resource allocation job	
	SIZDFORM	Specify the size of the DFORMLIB allocated by the resource allocation job	
	SIZDIMG	Specify the size of the DIMGLIB allocated by the resource allocation job	
	SIZLOGO	Specify the size of the CLOGOLIB allocated by the resource allocation job	
	SIZPDL	Specify the size of the PDLLIB allocated by the resource allocation job.	
	SIZPFONT	Specify the size of the PFONTLIB allocated by the resource allocation job	
	SIZPFORM	Specify the size of the PFORMLIB allocated by the resource allocation job	
	SIZPIMG	Specify the size of the PIMGLIB allocated by the resource allocation job	
	SMS	Optional. Default SMS Storage and/or Management Class for non-VSAM datasets	
	SMSVSAM	Optional. SMS Storage and/or Management Class for non-VSAM cluster definitions	
	VSMVOL	Use specified volume serial number for generated VSAM resource file definitions	
	VSMVOLCF	Optional (if SMSVSAM or DVOLSER specified). VOLSER of the DASD volume used to allocated native centralized font library	
	VSMVOLDF	Optional (if SMSVSAM or DVOLSER specified). VOLSER of the DASD volume used to allocated native decentralized font library	

## #GENMNT worksheet

---

The #GENMNT macro generates SMP/E jobs to install product maintenance, which is performed only when you receive a preventive or corrective maintenance tape. Information from other macros also is used for installing maintenance software.

Macro	Parameter	Description	Site values
#GENMNT	HOLDFILE	Optional. Generate SMPHOLD controls in the stage 2 RECEIVE job?	
	SMPSRCID	Optional. Specify the SMP/E SOURCEID assigned to all PTFs and APARs received	
	TAPEUNIT	Optional. Specify the tape unit name from which the maintenance tape is input	
	TAPEVOL	Specify the VOLSER of the maintenance tape	
	TLABEL	Optional. Select the type of label processing to be used on the corrective service tape	

## #GENTOOL worksheet

---

The #GENTOOL macro identifies a specific utility, sample, or job to be generated for corrective or preventive maintenance. When you execute #GENTOOL, XPAF places the output that has been tailored to your site-specific settings in the XPFTOOLS dataset. XPAF uses this data when you use the generated element.

The maintenance bulletin for the corrective or preventive maintenance tape will provide instructions on how to use the generated utility, sample, or job.

Macro	Parameter	Description	Site values
#GENTOOL	MACRO	Optional. Enter the macro name of the element to be generated	

## 3. *SMP/E installation*

---

This chapter lists the different SMP/E installation procedures required for installing XPAF, including steps for installing:

- The base product
- Maintenance tape
- User modifications
- User exits

Use the checklists supplied to record your progress as you perform each step.

### *Installing the base product*

---

The procedure for installing the base product tape for XPAF 3.0. is listed here. These steps explain how to:

- Complete the pre-installation worksheets
- Perform a system backup of all XPAF related libraries
- Unload the installation library
- Set up and execute the stage 1 job
- Generate and execute stage 2 jobs
- Perform the SMP/E installation

Perform these steps in sequential order.

### *Before you begin*

---

Before you begin the XPAF installation, review these items.

### *Experience level*

---

To install XPAF you should have systems programming experience and a working knowledge of MVS, JES2 and/or JES3, SMP/E, VSAM, and ISPF/PDF. If you encounter any unfamiliar terms, refer to the appropriate IBM reference manual for more information. If you need further help installing this product, contact your local Xerox service representative.

## *Required security access levels*

---

These security levels are required:

- Have either update access to the LPA library or authority to create new libraries in the Master Catalog.
- Have alter access to LDM files based on how your security system handles VSAM control interval processing. For example, RACF security requires CONTROL authority to access files managed by control interval processing.
- Have update access to SYS1.PARMLIB, SYS1.PROCLIB, the VTAMLST dataset, and the XOSF log datasets.
- Have update access to the JES2 and/or JES3 parameters library.
- Have read access to any datasets required by XPAF.

You must also be able to issue MVS and JES operator commands.

## *System modifications*

---

Ensure that no local usermods are applied that alter MVS or JES control blocks and/or JES processing flow. JES control blocks can have user-added fields without affecting the operation of the system. However, if you remove fields in JES control blocks or alter their field lengths, XPAF may not function properly.

## *Checklist for installing a base tape*

---

As you complete each step, enter the completion date in the checklist table to track and record your progress. Each step is explained later in this chapter.



---

**NOTE:** Review the maintenance bulletin accompanying the most current maintenance tape to determine if you need to run any special procedures before installing the base product tape.

---

Step	Action	Date completed
1	Complete the pre-installation worksheets	
2	Perform a system backup	
3	Unload the installation library	
4	Allocate stage 2 library	
5	Set up stage 1 job	
	A Edit the #GENDFLT parameters in GENINST	
	B Edit the #GENJBCD parameters in GENINST	
	C Edit the #GENJES parameters in GENINST	
	D Edit the #GENPROD parameters in GENINST	
	E Edit the #GENSMP parameters in GENINST	
	F Edit the #GENEND parameters in GENINST	
6	Print installation service macros (optional)	
7	Generate stage 2 jobs	
8	Submit SMP/E installation jobs	
	A Submit IJOB101	
	B Submit IJOB102	
	C Submit IJOB103	
	D Submit IJOB104	
	E Submit IJOB105	
	F Submit IJOB106	
	G Submit IJOB107	
	H Submit IJOB108	
9	Perform post-installation steps	
	A Convert CLIST files (optional)	
	B Refresh LLA address space for XDS (optional)	

## Step 1 – Complete the pre-installation worksheets

---

Before you begin the installation process, you and your Xerox service representative or systems analyst will participate in a site-planning visit. During this visit, you will help the service representative complete the pre-installation worksheets for the installation service macros, which help define your site's environment to XPAF. These worksheets and a description of the parameters associated with the installation service macros can be found at the end of this chapter.

## Step 2 – Perform a system backup

---

Before you unload the installation library, you should perform normal backup procedures for:

- Any previous versions of XPAF
- System libraries such as PARMLIBs, PROCLIBs, LPALST libraries, and ISPF libraries

## Step 3 – Unload the installation library

---

Use the SMP/E MCS file to install XPAF on your system. Use JCL similar to this to unload XEROX.ISM.INSTLIB from the delivery tape. The low-level qualifier of the target library should be "INSTLIB." Use the same high-level qualifiers you plan to use for installing XPAF. The VOLSER is provided on the installation service macro tape.

```
//job-name JOB job-information
/*
/*      THIS JOB UNLOADS XPAF INSTLIB TO DISK
/*
//UNLOAD      EXEC PGM=IEBCOPY
//SYSPRINT    DD  SYSOUT=*
//I NDD       DD  DSN=XEROX. I SM. I NSTLI B, UNI T=3480, DI SP=OLD,
//           VOL=SER=vol ser, LABEL=(1, SL, EXPDT=98000)
//OUTDD       DD  DSN=pre fi x. I NSTLI B, DI SP=(, CATLG),
//           UNI T=sysda, SPACE=(TRK, (50, 5, 45))
//SYSIN       DD  *
              COPY I=I NDD, O=OUTDD
/*
```

## Step 4 – Allocate stage 2 library

---

All output from stage 1 is considered the stage 2 library. Xerox recommends using a separate stage 2 library instead of INSTLIB because it offers these advantages:

- The names of installation macros are not displayed when you view the directory during stage 2 processing.
- The INSTLIB member has fewer members.

Allocate the stage 2 library using either TSO or the ALOCSTG2 member in INSTLIB. The library must have the same high-level qualifier(s) as the INSTLIB.

- If you use TSO, allocate the stage 2 library with these attributes:

RECFM	FB
LRECL	80 bytes
BLKSIZE	any multiple of 80
Directory blocks	30
Space	40 tracks of 3380 space or equivalent

- If you use the ALOCSTG2 member to allocate the stage 2 library, make these changes:
  - Add a valid job card to the start of the job.
  - Go to the end of the job and change the HLQ parameter to reflect your site's dataset high-level qualifier for INSTLIB.

For further information on allocating your stage 2 library, refer to “[Step 7 – Generate stage 2 jobs](#)” later in this chapter.

## Step 5 – Set up stage 1 job

Stage 1 consists of setting up the installation service macros (ISMs) to reflect your site's dataset naming conventions, operating system specifics, and dataset placements for generating stage 2 jobs.

The GENINST member of the INSTLIB dataset contains the macro call for each ISM used to install the base product. Edit this member to specify your site-specific values for the parameters in each macro call.



**NOTE:** Each parameter in GENINST is in Assembly Language Macro format. You must include continuation characters in column 72 and commas between parameters. If the value you specify contains commas, periods, equal signs, or other special characters, you must enclose the string in single quotation marks. If you need to code a single quotation mark within a string, they must be coded as two single quotation marks.



**CAUTION:** Do not edit the actual macro members in the INSTLIB dataset. Edit only the GENINST member in INSTLIB.

GENINST contains the specifications used by the various ISMs when generating the stage 2 jobs via ASMUPD. This job then generates the stage 2 jobs, which you submit to install the base product.

### Step 5A – Edit the #GENDFLT parameters in GENINST

In the GENINST member of INSTLIB, locate the parameters used in calling the #GENDFLT macro. Enter your site's values for each parameter.

The #GENDFLT macro allows you to specify default values and other nonspecific values required for installation. Throughout this installation process, you have the option to fill in a parameter or leave it blank, in which case the default value is used. This macro sets the default values for the parameters that you leave blank in other macros.

Example:

```
#GENDFLT
DUNI T=, X
DVOLSER=, X
HLQ=prefi x, X
LOADSI ZE=23200, X
OCLASS=, X
OPTI ONS=, X
SMS=, X
SMSVSAM=, X
SRCLI B=prefi x. SOURCE, X
TAPEUNI T=TAPE, X
TSOBLKSZ=
```

#GENDFLT parameter definitions

This table provides a description for each parameter in the #GENDFLT macro.

Parameter	Description
<b>DUNIT</b>	Specifies the default UNIT value for allocating non-VSAM datasets during installation. Default: None
<b>DVOLSER</b>	Specifies the default volume serial ID of the DASD device on which product datasets will be allocated. Default: None
<b>HLQ (optional)</b>	Identifies the default high-level qualifier used by other installation macros which require a high-level qualifier. For example, if you leave the HLQ parameter blank in the #GENPROD macro, it defaults to the high-level qualifier you specify here. Default: None
<b>LOADSIZE</b>	Specifies the user-designated block size of the installation-generated execution libraries (XPFLPAD and XPFLPA). Defaults: <div style="margin-left: 40px;"> XPFLPAD    Uses DCB attributes of SYS1.LINKLIB  XPFLPA    Uses DCB attributes of SYS1.LPALIB </div> If you specify ABLK in the OPTIONS parameter, these defaults are overridden by the user-specified system defaults.
<b>OCLASS</b>	Specifies the print output class that is generated on all stage 2 SYSOUT DD statements. Valid values: <div style="margin-left: 40px;"> *    Specifies that you are a US customer.  A    Specifies that you are an international customer. </div>

Parameter	Description
<b>OPTIONS</b>	<p>Identifies which default options to use when installing XPAF.</p> <p>Valid values:</p> <p>    <b>ABLK</b>    Specifies whether to use the Automatic Blocking feature available with DFP V3 and higher. This feature allows you to allocate non-VSAM datasets without specifying a block size. When a dataset is allocated, a default block size will be assigned based on its record format. The default is set by the technical staff at your site.</p> <p>    <b>ASUB</b>    Indicates whether installation jobs are submitted automatically or manually. For example, if you specify this option, XPAF automatically submits the next job in a series of jobs when the current job has completed with a successful return code.</p> <p>                This option applies to installation jobs (IJOB<math>nnn</math>), maintenance jobs (MPJOB<math>nnn</math>), resource jobs (RJOB<math>nnn</math>), and user modification jobs (UMJOB<math>nnn</math>) generated by the installation process.</p> <p>    <b>IEV90</b>    Specifies that SMP/E will use the IEV90 assembler program to assemble tables and user exits. If you do not specify this option, SMP/E uses the ASMA90 assembler program.</p> <p>    <b>PQ</b>      Generates the product qualifier in dataset names during the installation process. This qualifier consists of the values found in the PRODUCT and PRODVRM parameters in the #GENPROD macro.</p> <p>Examples:</p> <p>    OPTIONS=IEV90      OPTIONS=(ABLK,ASUB,PQ)</p>
<b>SMS (optional)</b>	<p>Specifies the default SMS Storage and/or Management Class used for all non-VSAM allocated datasets generated by the installation process. Using this parameter signals the generation of SMS keywords in the DD statements. This allows your system to place the datasets in user-defined storage areas controlled by the operating system.</p> <p>The default class assignments can be overridden by specifying the SMS parameter in the macro responsible for the dataset generation (#GENSMP or #GENPROD).</p> <p>Valid values:</p> <p>    <b>YES</b>          SMS uses the system ACS routines for allocation of datasets.</p> <p>    <i>storclass</i>      SMS uses the user-defined storage class for allocation of datasets.</p> <p>    <i>mgmtclass</i>      SMS uses the user-defined management class for allocation of datasets.</p> <p>Default: None</p> <p>Examples:</p> <p>    SMS=<i>storclass</i>      SMS=(<i>storclass</i>,<i>mgmtclass</i>)      SMS=(,<i>mgmtclass</i>)</p>

Parameter	Description
<b>SMSVSAM (optional)</b>	<p>Specifies the SMS Storage and/or Management Class used for all SMP VSAM cluster definitions generated by the installation process. Using this parameter signals the generation of SMS keywords in the DEFINE statements. This allows your system to place the datasets in user-defined storage areas controlled by the operating system.</p> <p>The default class assignments can be overridden by specifying the SMS parameter in the #GENSMP macro.</p> <p>Valid values:</p> <p>YES            SMS uses the system ACS routines for allocation of datasets.</p> <p><i>storclass</i>    SMS uses the user-defined storage class for allocation of datasets.</p> <p><i>mgmtclass</i>   SMS uses the user-defined management class for allocation of datasets.</p> <p>Default: None</p> <p>Examples:</p> <p>SMSVSAM=<i>storclass</i>  SMSVSAM=(<i>storclass</i>,<i>mgmtclass</i>)  SMSVSAM=(,<i>mgmtclass</i>)</p>
<b>SRCLIB (optional)</b>	<p>Specifies the fully qualified dataset name of the PDS used for user-modifiable source supplied with XPAF. If this parameter is specified, all installation-supplied sample members that you must edit and change are copied into this library by the installation process. Using this optional library eliminates the risk of overlaying a user-modified source member with product maintenance.</p> <p>Default: None</p>
<b>TAPEUNIT</b>	<p>Specifies the default tape unit name for installation jobs that require a tape drive.</p> <p>Default: None</p>
<b>TSOBLKSZ</b>	<p>Specifies the block size to be used for allocating any TSO-related datasets such as PLIB and SLIB. This value must be a multiple of 80 bytes.</p> <p>Default: 7440</p>

## Step 5B – Edit the #GENJBCD parameters in GENINST

In the GENINST member of INSTLIB, locate the parameters used in calling the #GENJBCD macro. Enter your site's values for each parameter.

The #GENJBCD macro allows you to specify either a job card name and parameters that will be generated on the stage 2 job cards or an alternate method of supplying this information. Use either of these options:

- To generate job cards on each stage 2 job with your site-specific information, enter the data in the parameters contained in the GENINST member.
- To supply JCL to be generated at the beginning of all stage 2 jobs, edit the @JOB CARD macro in INSTLIB, and create the prototype JCL exactly as it is required with a REPRO statement ahead of each JCL card (refer to the @JOB CARD macro in INSTLIB for an example). To invoke this action, specify JOBOPT=REPRO in the #GENJBCD section of the GENINST member of INSTLIB. All other parameters for this macro are then ignored.

You also can specify that no job card JCL is generated on stage 2 jobs. To invoke this action, specify JOBOPT=NOJBCD in the #GENJBCD section of the GENINST member in INSTLIB. All other parameters for this macro are then ignored.



**NOTE:** If you do not specify values for any of the #GENJBCD parameters, no job card will be generated.

Example:

```
#GENJBCD
JOB CD1=' (E475, 9901) , ' ' I NSTALL' ' , CLASS=X, ' ,      X
JOB CD2=' MSGCLASS=X, NOTI FY= BRODR' ,                      X
JOB CD3= ,                                                    X
JOBNAME=USERJB,                                              X
JOBOPT= ,                                                    X
JOBPARM=' LI NECT=50' ,                                       X
JOBVARY=
```

Result:

```
//USERJB JOB (E475, 9901) , ' I NSTALL' , CLASS=X, MSGCLASS=X,
//      NOTI FY= BRODR
/*JOBPARM LI NECT=50
```

To include a single quote for the job card output, you must code two single quotes.

#GENJBCD parameter definitions

This table provides a description for each parameter in the #GENJBCD macro.

Parameter	Description
<b>JOBCD1 (optional)</b>	Specifies the job card parameters you supply to be placed on the first job card. If the job parameters are continued on another card, a comma must be placed at the end of the last parameter on the card. The // and JOB statement are supplied by installation macros.  Default: None
<b>JOBCD2 (optional)</b>	Specifies continued job card parameters from JOBCD1. The // and JOB statement are supplied by installation macros.  Default: None
<b>JOBCD3 (optional)</b>	Specifies continued job card parameters from JOBCD2. The // and JOB statement are supplied by installation macros.  Default: None
<b>JOBNAME (optional)</b>	Specifies the JOB name that is placed on all job cards generated during stage 1. The maximum parameter length is eight characters and, if the JOBVARY option is used, the name must be less than eight characters.  Default: None
<b>JOBOPT (optional)</b>	Specifies options to the stage 1 macros that control the generation of the JCL on stage 2 jobs.  Valid values:  <div style="margin-left: 40px;"> NOJBCD      Suppresses all job card JCL generation on stage 2 jobs.   REPRO       Instructs stage 1 processing to use the @JOB CARD facility described in the installation procedure to generate the stage 2 job card JCL. </div> Default: NOJBCD
<b>JOBPARM (optional)</b>	Specifies JOBPARM card parameters you supply to be placed on the installation /*JOBPARM card. If you omit this parameter or leave it blank, no /*JOBPARM is generated. The /*JOBPARM is supplied by installation macros.  Default: None
<b>JOBVARY (optional)</b>	Varies the JOBNAME on each job of the stage 2 JCL generated by the stage 1 macros.  Valid values:  <div style="margin-left: 40px;"> YES        Each JOBNAME will have a unique suffix in the stage 2 JCL. If the job name supplied by the JOBNAME parameter is eight characters, no name variance occurs.   NO         The job name you supply in the JOBNAME parameter is used as is for all stage 2 jobs. </div> Default: NO

## Step 5C – Edit the #GENJES parameters in GENINST

In the GENINST member of INSTLIB, locate the parameters used in calling the #GENJES macro. Enter your site's values for each parameter.

The #GENJES macro supplies stage 2 jobs and sample members with information about your JES environment. Some information in this macro is also used in conjunction with the #GENSMP macro in setting up the SMP/E installation jobs.

Example:

```
#GENJES
JESFSSID=XOSF,           X
JESMAC=,                 X
JESPROD=JES2,            X
JESUMAC=,                 X
JESVER=5,                 X
OS390=
```

### #GENJES parameter definitions

This table provides a description for each parameter in the #GENJES macro.

Parameter	Description
<b>JESFSSID (optional)</b>	Specifies the JES functional subsystem ID. You should allow this parameter to use its default value. Default: XOSF
<b>JESMAC (optional)</b>	Allows you to override the IBM-supplied macro library name for the version of JES you are using: SYS1.HASPSRC for JES2 and SYS1.JES3MAC for JES3. Enter the name you want to use. Default: SYS1.HASPSRC (JES2) SYS1.JES3MAC (JES3)
<b>JESPROD</b>	Identifies the JES product under which you are installing XPAF. Refer to <a href="#">“Defining XPAF to JES”</a> in chapter 5, <a href="#">“Customizing your system”</a> for instructions concerning activating XPAF with JES. Valid values: JES2    JES2 support is generated. JES3    JES3 support is generated. Default: None
<b>JESUMAC (optional)</b>	Defines the library used when you assemble your JES source or exits. If you are using a modified version of the JES macro library, enter that library's dataset name as the value for this parameter. Default: None

Parameter	Description
<b>JESVER</b>	<p>Specifies the version of JES you are using on your system. The system generates the sample JCL supported by the JES version you enter in this parameter.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>4 Specifies JES version 4.</li> <li>5 Specifies JES version 5.</li> </ul> <p>Default: None</p>
<b>OS390</b>	<p>Indicates the JES level being used for systems running the OS/390 host operating system. This value will be used as the mid-level qualifier for the JES macro names generated by #GENJES.</p> <p>This parameter is required for OS/390 systems, but should not be used if you do not run OS/390 on your system.</p> <p>Valid values: A 6-character value indicating the version, release, and modification level of the JES software.</p> <p>Default: None</p> <p>Example:</p> <p>OS390=V1R1M0</p>

### *Step 5D – Edit the #GENPROD parameters in GENINST*

In the GENINST member of INSTLIB, locate the parameters used in calling the #GENPROD macro. Enter your site's values for each parameter.


This macro assigns values to installation parameters used to generate SMP/E installation jobs.


Example:

```
#GENPROD
DUNI T=, X
DVOLSER=, X
HLQ=prefix, X
HLQLPA=master-prefix, X
HLQMST=, X
OPTI ONS=, X
PRODUCT=XPAF, X
PRODVLM=300, X
SMS=, X
SMSVSAM=, X
UMODJOFT=XUM0001
```

#GENPROD parameter definitions

This table provides a description for each parameter in the #GENPROD macro.

Parameter	Description
<b>DUNIT</b>	Specifies the UNIT value for allocating non-VSAM XPAF datasets during installation. This parameter is required unless SMS is used for allocating product datasets or you specify the DUNIT parameter in the #GENDFLT macro. Default: None
<b>DVOLSER</b>	Specifies the volume serial ID of the DASD device used for allocating XPAF target and distribution libraries. This parameter is required unless you use SMS for allocation or you specify the DVOLSER parameter in the #GENDFLT macro. Default: None
<b>HLQ (optional)</b>	Specifies the high-level qualifier for all non-VSAM XPAF datasets allocated during installation. These libraries consist of target and distribution libraries for executing and maintaining XPAF. The HLQLPA or HLQMST, if specified, override HLQ for XPFLDLOAD and XPFLPA. Default: The value specified for the HLQ parameter in the #GENDFLT macro. If you do not specify the HLQ parameter in the #GENDFLT or #GENPROD macros, an error message is issued and the assembly terminates.
<b>HLQLPA (optional)</b>	Specifies a high-level qualifier that will be used to catalog the XPFLPA dataset in the Master Catalog of your system during XPAF installation. This high-level qualifier is assigned to the XPFLPA to expedite installation and customization. If you specified HLQMST, this parameter is ignored. Default: None
<b>HLQMST (optional)</b>	Specifies a high-level qualifier that will be used to catalog the XPFLPA dataset in the Master Catalog of your system during XPAF installation. This high-level qualifier is assigned to the XPFLDLOAD and XPFLPA to expedite installation and customization. Default: None   <p><b>CAUTION:</b> Both HLQMST and HLQLPA specify high-level qualifiers that are cataloged in the Master Catalog. If you have multiple systems with multiple catalogs, these datasets must be cataloged in all Master Catalogs for all systems on which XPAF or on which jobs containing XPAF extended JCL are submitted.</p>

Parameter	Description
<b>OPTIONS</b>	<p>Indicates that one or both of these options be used:</p> <ul style="list-style-type: none"> <li>Install Xerox Direct Print Services (XDS) elements as part of the XPAF LPA library. If not specified, the XDS FMID will not be installed and XDS will not be available for use.</li> </ul> <hr/> <p> <b>NOTE:</b> If you install XDS elements for XPAF 3.0, you will no longer be able to use XDS with your XPAF 2.2 system.</p> <hr/> <ul style="list-style-type: none"> <li>Bypass running the SMP/E APPLY and ACCEPT CHECK jobs IJOB105 and IJOB107. If you specify this option, you also must specify <b>ASUB</b> in the #GENDFLT macro.</li> </ul> <p>Valid values:</p> <p>XDS            Installs the XDS FMID.</p> <p>NOCHK        Does not submit installation jobs IJOB105 and IJOB107.</p> <p>Default: None</p> <p>Examples:</p> <p>OPTIONS=XDS OPTIONS=(XDS,NOCHK)</p>
<b>PRODUCT</b>	<p>Identifies the software product you are installing. Enter XPAF to generate XPAF installation jobs.</p> <p>Default: XPAF</p>
<b>PRODVRM</b>	<p>Identifies the version, release, and modification level of the base product. This field is a maximum of 3 bytes. If the value ends in zeros, they may be omitted. The tape volume serial number of the base tape being installed is generated from this value.</p> <p>Default: 300</p>

Parameter	Description						
<b>SMS (optional)</b>	<p>Specifies the SMS Storage and/or Management Class used for all SMP non-VSAM allocated datasets generated by the installation process. Using this parameter signals the generation of SMS keywords in the DD statements. This allows your system to place the datasets in user-defined storage areas controlled by the operating system.</p> <p>This parameter overrides any default class assignment specified in the #GENDFLT macro.</p> <p>Valid values:</p> <table> <tr> <td>YES</td><td>SMS uses the system ACS routines for allocation of datasets.</td></tr> <tr> <td><i>storclass</i></td><td>SMS uses the user-defined storage class for allocation of datasets.</td></tr> <tr> <td><i>mgmtclass</i></td><td>SMS uses the user-defined management class for allocation of datasets.</td></tr> </table> <p>Default: None</p> <p>Examples:</p> <pre>SMS=storclass SMS=(storclass,mgmtclass) SMS=(,mgmtclass)</pre>	YES	SMS uses the system ACS routines for allocation of datasets.	<i>storclass</i>	SMS uses the user-defined storage class for allocation of datasets.	<i>mgmtclass</i>	SMS uses the user-defined management class for allocation of datasets.
YES	SMS uses the system ACS routines for allocation of datasets.						
<i>storclass</i>	SMS uses the user-defined storage class for allocation of datasets.						
<i>mgmtclass</i>	SMS uses the user-defined management class for allocation of datasets.						
<b>SMSVSAM (optional)</b>	<p>Specifies the SMS Storage and/or Management Class used for all SMP VSAM cluster definitions generated by the installation process. Using this parameter signals the generation of SMS keywords in the DD statements. This allows your system to place the datasets in user-defined storage areas controlled by the operating system.</p> <p>This parameter overrides any default class assignment specified in the #GENDFLT macro.</p> <p>Valid values:</p> <table> <tr> <td>YES</td><td>SMS uses the system ACS routines for allocation of datasets.</td></tr> <tr> <td><i>storclass</i></td><td>SMS uses the user-defined storage class for allocation of datasets.</td></tr> <tr> <td><i>mgmtclass</i></td><td>SMS uses the user-defined management class for allocation of datasets.</td></tr> </table> <p>Default: None</p> <p>Examples:</p> <pre>SMS=storclass SMS=(storclass,mgmtclass) SMS=(,mgmtclass)</pre>	YES	SMS uses the system ACS routines for allocation of datasets.	<i>storclass</i>	SMS uses the user-defined storage class for allocation of datasets.	<i>mgmtclass</i>	SMS uses the user-defined management class for allocation of datasets.
YES	SMS uses the system ACS routines for allocation of datasets.						
<i>storclass</i>	SMS uses the user-defined storage class for allocation of datasets.						
<i>mgmtclass</i>	SMS uses the user-defined management class for allocation of datasets.						
<b>UMODJOFT (optional)</b>	<p>Specifies the name SMP/E uses to install the JES offset table. This usermod supplies XPAF with the correct JES control block offsets required for JES communication.</p> <p>Default: XUM0001</p>						

## Step 5E – Edit the #GENSMP parameters in GENINST

In the GENINST member of INSTLIB, locate the parameters used in calling the #GENSMP macro. Enter your site's values for each parameter.

The #GENSMP macro supplies stage 2 SMP/E jobs with all the necessary information for the successful installation of XPAF.

You have several SMP/E options available for installing XPAF. For more information on these options, refer to “[#GENSMP parameter definitions](#)” later in this chapter.


Example:

```
#GENSMP
DUNIT=3380, X
DVOLSER=VOL004, X
DWORK=SYSDA, X
HLQ=prefix, X
HLQVSAM=, X
MTS=, X
RELEASE=5, X
SMS=, X
SMSVSAM=, X
USERHLQ=, X
USEROPT=1, X
VSMVOL=
```

### #GENSMP parameter definitions

This table provides a description for each parameter in the #GENSMP macro.

Parameter	Description
<b>DUNIT (optional)</b>	Specifies the UNIT value used for allocating non-VSAM SMP/E datasets and the SMPTLIB during installation. This parameter is required unless the DUNIT parameter in the #GENDFLT macro is specified. If you omit this parameter, a value of SYSALLDA is assigned to facilitate allocation of the SMPTLIB.  Default: SYSALLDA
<b>DVOLSER</b>	Specifies the volume serial ID of the DASD device used for allocating the XPAF SMP/E files. If an SMS or DUNIT value is specified, this value is used for VSAM file allocation only. This parameter is required unless the DVOLSER parameter in the #GENDFLT macro is specified.  Default: None
<b>DWORK (optional)</b>	Specifies the UNIT value used for SMP SYSUTx and SMPWRKx file allocation during SMP/E execution. This parameter is optional only if you specify a value for either the #GENDFLT parameter DUNIT or the #GENSMP parameter DUNIT.  Default: If you omit this parameter, the value you specified for DUNIT is used. If you leave this parameter blank, it defaults to SYSDA.

Parameter	Description						
<b>HLQ (optional)</b>	Specifies the HLQ for all SMP/E non-VSAM datasets allocated during XPAF installation.  Default: The value specified for the HLQ parameter in the #GENDFLT macro.						
<b>HLQVSAM (optional)</b>	Specifies the HLQ for all SMP/E VSAM datasets allocated during XPAF installation.  Default: The value you specified for the HLQ parameter in this macro or its default if you did not specify one.						
<b>MTS (optional)</b>	<p>Instructs the installation process to include the SYSTEM MTS in all MTS DD concatenations. Use this parameter if you are installing XPAF on a system that frequently contains JES changes in an APPLY status.</p> <p>Valid values:</p> <table> <tr> <td>YES</td><td>Concatenates the default name (SYS1.SMPMTS) to MTS DD statements.</td></tr> <tr> <td>NO</td><td>Does not concatenate SYS1.SMPMTS to MTS DD statements.</td></tr> <tr> <td><i>dataset-name</i></td><td>Identifies the fully qualified name of the system SMPMTS dataset to be concatenated to MTS DD statements.</td></tr> </table> <p>Default: YES</p> <hr/> <p> <b>CAUTION:</b> Use caution if XPAF is installed on a test system with JES changes APPLYd but not ACCEPTed and then moved to a production system where the changes have not been introduced. If the test system has introduced a change to the JES control block, you must reassemble XDIOFTAB before executing the product.</p> <hr/>	YES	Concatenates the default name (SYS1.SMPMTS) to MTS DD statements.	NO	Does not concatenate SYS1.SMPMTS to MTS DD statements.	<i>dataset-name</i>	Identifies the fully qualified name of the system SMPMTS dataset to be concatenated to MTS DD statements.
YES	Concatenates the default name (SYS1.SMPMTS) to MTS DD statements.						
NO	Does not concatenate SYS1.SMPMTS to MTS DD statements.						
<i>dataset-name</i>	Identifies the fully qualified name of the system SMPMTS dataset to be concatenated to MTS DD statements.						
<b>RELEASE (optional)</b>	Specifies the current release of SMP/E your system is using to install XPAF. SMP/E release levels 5 and higher are supported by XPAF.  If you change release levels after your initial XPAF installation, this value does not need to be changed.  Default: 5						

Parameter	Description						
<b>SMS (optional)</b>	<p>Specifies the default SMS Storage and/or Management Class used for all non-VSAM allocated datasets generated by the installation process. Using this parameter signals the generation of SMS keywords in the DD statements. This allows your system to place the datasets in user-defined storage areas controlled by the operating system.</p> <p>This parameter overrides any default class assignment specified in the #GENDFLT macro.</p> <p>Valid values:</p> <table> <tr> <td>YES</td><td>SMS uses the system ACS routines for allocation of datasets.</td></tr> <tr> <td><i>storclass</i></td><td>SMS uses the user-defined storage class for allocation of datasets.</td></tr> <tr> <td><i>mgmtclass</i></td><td>SMS uses the user-defined management class for allocation of datasets.</td></tr> </table> <p>Default: None</p> <p>Examples:</p> <pre>SMS=<i>storclass</i> SMS=(<i>storclass</i>,<i>mgmtclass</i>) SMS=(,<i>mgmtclass</i>)</pre>	YES	SMS uses the system ACS routines for allocation of datasets.	<i>storclass</i>	SMS uses the user-defined storage class for allocation of datasets.	<i>mgmtclass</i>	SMS uses the user-defined management class for allocation of datasets.
YES	SMS uses the system ACS routines for allocation of datasets.						
<i>storclass</i>	SMS uses the user-defined storage class for allocation of datasets.						
<i>mgmtclass</i>	SMS uses the user-defined management class for allocation of datasets.						
<b>SMSVSAM (optional)</b>	<p>Specifies the SMS Storage and/or Management Class used for all SMP VSAM cluster definitions generated by the installation process. Using this parameter signals the generation of SMS keywords in the DEFINE statements. This allows your system to place the datasets in user-defined storage areas controlled by the operating system.</p> <p>This parameter overrides any default class assignment specified in the #GENDFLT macro.</p> <p>Valid values:</p> <table> <tr> <td>YES</td><td>SMS uses the system ACS routines for allocation of datasets.</td></tr> <tr> <td><i>storclass</i></td><td>SMS uses the user-defined storage class for allocation of datasets.</td></tr> <tr> <td><i>mgmtclass</i></td><td>SMS uses the user-defined management class for allocation of datasets.</td></tr> </table> <p>Default: None</p> <p>Examples:</p> <pre>SMS=<i>storclass</i> SMS=(<i>storclass</i>,<i>mgmtclass</i>) SMS=(,<i>mgmtclass</i>)</pre>	YES	SMS uses the system ACS routines for allocation of datasets.	<i>storclass</i>	SMS uses the user-defined storage class for allocation of datasets.	<i>mgmtclass</i>	SMS uses the user-defined management class for allocation of datasets.
YES	SMS uses the system ACS routines for allocation of datasets.						
<i>storclass</i>	SMS uses the user-defined storage class for allocation of datasets.						
<i>mgmtclass</i>	SMS uses the user-defined management class for allocation of datasets.						
<b>USERHLQ</b>	<p>Specifies the HLQ used for the generation of SMP dataset names if USEROPT option 2 or 3 is selected. This parameter is required only if USEROPT is set to a value other than 1. This entry is ignored if USEROPT=1. The HLQ specified is then appended to the standard IBM SMP low level qualifier name where it is used throughout the installation process.</p> <p>Default: None</p>						

Parameter	Description
<b>USEROPT (optional)</b>	<p>Specifies the level of allocation for required SMP/E datasets. Depending on the option specified, all, some, or none of these datasets will be allocated by the installation process.</p> <p>Valid values:</p> <ol style="list-style-type: none"> <li>1 All SMP datasets required for product installation and maintenance will be allocated by the installation process.</li> <li>2 User-specified CSI and SMPPTS datasets will be used and all other required SMP datasets will be allocated by the installation process. The HLQ for the CSI and SMPPTS is specified by the USERHLQ parameter.</li> <li>3 All SMP required datasets are supplied by the user and will not be allocated by the installation process. The HLQ for all SMP datasets is specified by the USERHLQ parameter. All SMP dataset names in the installation process will be generated with the IBM standard low level qualifiers (such as SMPLOGA, SMPMTS, and SMPSCDS).</li> </ol> <p>Default: 1</p>
<b>VSMVOL</b>	<p>Indicates whether to use the volume serial number specified here as the SMPCSI dataset for the VSAM file definitions generated by the #GENSMP macro. This parameter is required unless you specify the SMSVSAM or DVOLSER parameters.</p> <p>Default: None</p>

### *Step 5F – Edit the #GENEND parameters in GENINST*

In the GENINST member of INSTLIB, locate the parameters used in calling the #GENEND macro. Review the default values specified for each parameter.

The #GENEND macro specifies generation variables. The TYPE parameter in this macro specifies the type of stage 2 output you want to generate. Refer to “[Step 7 – Generate stage 2 jobs](#)” later in this chapter for more information on this parameter.

Example:

```
#GENEND
  STAGE2=YES,
  TYPE=INSTALL
```

If you need to recreate a portion of the TYPE=INSTALL output, you can specify the UMOD subset parameter of the INSTALL command. This parameter recreates the UMJOBxxx jobs for installing usermods.

### #GENEND parameter definitions

This table provides a description for each parameter in the #GENEND macro.

Parameter	Description
<b>STAGE2 (optional)</b>	<p>Specifies whether the stage 2 jobs and control statements will be placed by stage 1 into a library other than INSTLIB.</p> <p>Valid values:</p> <p>YES     The stage 1 processing will place the stage 2 jobs and control statements into a dataset with the same high-level qualifier as the XPAF INSTLIB. The low-level qualifier is STAGE2.</p> <p>NO      All stage 2 jobs and control statements will be placed into the XPAF INSTLIB by stage 1 processing.</p> <p>Default: YES</p>
<b>TYPE</b>	<p>Specifies the type of stage 2 jobs that are generated as output from stage 1 installation jobs.</p> <p>Valid values:</p> <p>INSTALL     Generates stage 2 jobs to install XPAF. This value is used with the #GENINST macro.</p> <p>MNT         Generates stage 2 jobs to install product maintenance using SMP/E. This value is used with the #GENMNT macro.</p> <p>RSC         Generates stage 2 jobs to install resources.</p> <p>UXIT         Generates stage 2 jobs to install user exits you create. This value is used with the #GENUXIT macro.</p> <p>Default: None</p>

### Step 6 – Print the installation service macros (optional)

After you enter your site-specific values for the ISMs in GENINST, you can print the file so you have a record of those value(s).

Use the IEBGENER utility to print GENINST, as shown in this sample job:

```
//job-name JOB job-information
//*
/*          PRINT MEMBER FROM PDS
/*
//PRINTMEM PROC NAME=
//PRINTMEM EXEC PGM=IEBGENER
//SYSUT1 DD DISP=SHR,DSN=prefix.INSTLIB(&NAME)
//SYSUT2 DD SYSOUT=X
//SYSPRINT DD DUMMY
//SYSIN DD DUMMY
//PRINTMEM PEND
//PRDETAL EXEC PRINTMEM,NAME=GENINST
```

## Step 7 – Generate stage 2 jobs

---

Use the ASMUPD member in INSTLIB to generate the jobs used to install the base product. When you submit ASMUPD, it generates stage 2 jobs and sample parameters based on your entries in stage 1. You can direct these jobs and sample parameters into a separate stage 2 library (the default) or into INSTLIB.

To generate stage 2 jobs, follow the procedure in one of these two options.

### Option 1: Using a separate stage 2 library

---

1. Specify STAGE2=YES in the #GENEND macro section of the GENINST member in INSTLIB. This indicates you are setting up the stage 2 jobs to process with a stage 2 library named prefix.STAGE2.
2. Edit the ASMUPD member in INSTLIB:
  - a. Add a valid job card to the start of the job.
  - b. Go to the end and change the HLQ parameter on the EXEC card to reflect your site's dataset high-level qualifier for INSTLIB.
  - c. Note that the STAGE2 parameter defaults to 'STAGE2'. This is the low-level qualifier for the stage 2 library and should not be changed.
  - d. SAVE the member before submitting it as a job.
3. Submit ASMUPD to generate the stage 2 jobs.

Valid return code: 00

If you receive a return code other than 00, review the MNOTES in the assembly output listing for further information. A return code of 01 through 04 is considered a warning, which you may review before continuing. A return code of 08 is considered an error, indicating that you must perform an action before continuing.

After stage 1 has completed successfully, stage 2 installation jobs and sample parameters are available in the stage 2 library.

## Option 2: Using INSTLIB

---

1. Specify STAGE2=NO in the #GENEND macro section of the GENINST member in INSTLIB. This indicates you are setting up all stage 2 jobs to use INSTLIB.
2. Edit the ASMUPD member in INSTLIB:
  - a. Add a valid job card to the start of the job.
  - b. Go to the end of the file and change the HLQ parameter on the EXEC card to reflect your site's dataset high-level qualifier for XPAF INSTLIB.
  - c. Change the STAGE2 parameter from the default value 'STAGE2' to 'INSTLIB'.
  - d. SAVE the member before submitting it as a job.
3. Submit ASMUPD to generate the stage 2 jobs.

Valid return code: 00

If you receive a return code other than 00, review the MNOTES in the assembly output listing for further information. Return codes 01 through 04 are warnings; return code 08 indicates an error.

After the ASMUPD job has run and completed successfully, stage 2 installation jobs and sample parameters are available in INSTLIB.

## Step 8 – Submit SMP/E installation jobs

---

You can find the JCL for each job listed below in the stage 2 library after stage 1 is complete. Submit the SMP/E jobs in the specified order to ensure XPAF is properly installed. IJOB101 through IJOB108 require no JCL modifications for proper execution and should be submitted as is.

If you have to reinstall XPAF from the beginning, first use job DJOB101 (supplied in the stage 2 library) to delete all the datasets allocated by the XPAF installation.




---

**NOTE:** Some of these installation jobs can generate more than 10,000 lines of output. Therefore, choose an appropriate SYSOUT class.

---

Also, some of these installation jobs have a long run time. Therefore, choose an appropriate job CLASS.

## Step 8A – Submit IJOB101

---

IJOB101 performs these functions:

- Allocates non-VSAM SMP/E datasets needed to install and maintain XPAF and associated functions.
- Allocates the SMPCSI needed to install and maintain XPAF and associated functions. This allocation occurs only if the #GENSMP parameter USEROPT=1.
- Copies GLOBAL definitions to the stage 1 library when a separate stage 2 library is used. This step is generated if you specified STAGE2=YES in the #GENEND parameter.

Valid return code: 00



**CAUTION:** Before you submit the next job (IJOB102) to initialize the XPAF CSI, make sure you have applied IBM PTF UY42039 to your system. This PTF is needed to create a SYS1.MODGEN dataset on your system. If UY42039 has not been applied, you must change all occurrences of MODGEN to AMODGEN in IJOB102.

---

## Step 8B – Submit IJOB102

---

IJOB102 performs these functions:

- Generates a dummy job if the #GENSMP parameter USERSOPT does not equal 1.
- Initializes the SMPCSI by copying the GIMZPOOL data from your system macro library.
- Defines and initializes a target and distribution library zone for XPAF and associated functions.
- Adds the OPTION member to the global zone to be used when installing or maintaining XPAF and associated functions.
- Adds DD definitions to these zones.

Valid return code: 00

### *Step 8C – Submit IJOB103*

---

IJOB103 allocates the target and distribution libraries needed to install and maintain XPAF.

Valid return code: 00

### *Step 8D – Submit IJOB104*

---

IJOB104 RECEIVES XPAF functions from the base product distribution tape.

Valid return code: 00

### *Step 8E – Submit IJOB105*

---

IJOB105 runs an APPLY CHECK on XPAF functions.

Valid return code: 00

### *Step 8F – Submit IJOB106*

---

IJOB106 APPLYs XPAF functions.

Valid return code: 00

### *Step 8G – Submit IJOB107*

---

IJOB107 runs an ACCEPT CHECK on XPAF functions.

Valid return code: 00

### *Step 8H – Submit IJOB108*

---

IJOB108 runs ACCEPTs on XPAF functions.

Valid return code: 04

## Step 9 – Perform post-installation steps

---

After you submit the last installation job, continue with your installation process:

- If you received XPAF software maintenance (preventive, level set, or corrective tapes) with your base product tape, install that software at this point in the installation procedure. For instructions, refer to “[Installing a maintenance tape](#)” later in this chapter.
- If you did not receive a maintenance tape with the base product tape, install the XPAF usermods. For instructions, refer to “[Installing usermods](#)” later in this chapter.

Also, you may need to perform the steps described here. Review these steps before continuing with the installation and perform any necessary tasks.

### Step 9A – Convert CLIST files (optional)

---

When you customize your system, you can convert CLIST files in the XPFCLIB dataset from FB to VB format. After copying any CLIST members you must edit and remove line numbers if they are present.

### Step 9B – Refresh LLA address space for XDS (optional)

---

To install XDS elements, you must refresh the MVS Library Lookaside address space after the installation is complete. To refresh this address space, enter this command:

```
MODIFY LLA,REFRESH
```

This command updates the MVS lookaside list with the addresses of the most current XDS modules.

## *Installing a maintenance tape*

---

Periodically, Xerox distributes XPAF software maintenance in the form of a preventive or corrective tape. These tapes provide enhancements and/or fixes to problems reported against XPAF between releases of the product.

This section contains the basic procedures for installing maintenance software, which you must repeat each time you receive a maintenance tape. The maintenance bulletin that accompanies the maintenance tape describes any procedures you may need to perform before or after installing the tape. You should review the maintenance bulletin before performing the procedures in this section.

If conflicts exist between the instructions in this section and those in the maintenance bulletin, use the information in the maintenance bulletin.

For the number of the most recent XPAF maintenance bulletin, call Xerox Technical Support.

## *Applicability of instructions*

---

When installing software maintenance, you can be categorized as one of three types of customers:

- NEW customers are installing the base XPAF tape for the first time.
- CURRENT customers have previously installed XPAF and have installed the latest preventive maintenance on their system.
- NOT CURRENT customers are existing XPAF customers who may have installed some corrective or preventive maintenance on their system but have not yet installed the latest preventive maintenance.

The heading for each maintenance installation step indicates to which type of customer the step applies. When reviewing the maintenance installation steps, refer to the section heading to determine whether the step applies to your site.

## Scheduling and tracking your installation

This table lists the activities to be performed during the maintenance process. Perform these procedures in the order shown.

As you complete each step, enter the completion date in the checklist table to track and record your progress. Each step is explained later in this chapter.

Step	Action	Date completed
1	Perform pre-installation steps	
	A Review maintenance bulletin for special instructions	
	B Verify contents of the maintenance package	
	C Verify software levels	
	D Perform SMP/E housekeeping	
	E Install maintenance to modules in the LPA	
2	Set up stage 1 job	
	A Verify previous maintenance	
	B Update GENMNT in INSTLIB	
3	Generate stage 2 jobs	
4	Code the SYSTEM HOLD bypass JCL	
5	Execute stage 2 jobs	
	A Edit and submit MPJOB101	
	B Edit and submit MPJOB102	
	C Edit and submit MPJOB103	
	D Edit and submit MPJOB104 (optional)	
	E Edit and submit MPJOB105 (optional)	
6	Perform post-installation procedures	
	A Complete applicable post-installation instructions	
	B Perform an IPL, if necessary	
	C Verify the maintenance installation	

## *Step 1 – Perform pre-installation procedures*

---

Perform these steps to prepare your system before installing a corrective or preventive maintenance tape.

### *Step 1A – Review the maintenance bulletin (New, Current, Not Current)*

---

The maintenance bulletin contains information that relates specifically to the maintenance tape you are installing. Before you begin, read through the bulletin to determine if there are any steps that must be performed before installing the maintenance tape.

### *Step 1B – Verify contents of maintenance package (New, Current, Not Current)*

---

Make sure that all of the required items are included in your maintenance package. If any item is missing, contact Xerox Technical Support and let them know what item you need. Each maintenance package should include:

- Packing list
- Maintenance tape(s)
- Maintenance bulletin

### *Step 1C – Verify software levels (New, Current, Not Current)*

---

You must have the XPAF V3R0M00 base product tape installed on your system before you apply an XPAF 3.0 maintenance tape.

In addition, you must be running a supported level of MVS and JES. To verify that you are running at supported levels, refer to chapter 2, [“Installation requirements.”](#)

### *Step 1D – Perform SMP/E housekeeping (New, Current, Not Current)*

---

Before you install a maintenance tape, complete these additional steps.

1. Back up all XPAF SMP/E, target, and distribution library datasets.
2. Perform an SMP/E Query with List to determine if the XPAF base software and any previous XPAF maintenance have been accepted.
  - If you have already accepted the base product and previous maintenance, skip this step.
  - If you have not accepted previous maintenance, run MPJOB104 and MPJOB105 to accept previously applied PTFs. You must specify BYPASS(HOLDSYSTEM) on the ACCEPT.
3. Compress all SMP/E, target, and DLIB partitioned datasets.
4. Back up all XPAF datasets again.
5. If you have modified any members within XPFSAMP and are using the members as source, save that source in a library other than XPFSAMP.

### *Step 1E – Install maintenance to modules moved to LPA (New, Current, Not Current)*

---

If you receive maintenance that updates one or more modules which have been moved to the LPA, you have two options:

- Install that maintenance directly to the LPA, as described below.
- Move the LPA-eligible module(s) to the LPA after you install the maintenance, as described in “[Step 6 – Perform post-installation procedures](#)” later in this chapter.

Refer to “[Tuning your system](#)” in chapter 5, “[Customizing your system](#)” for a list of the modules which can be moved to the LPA.

### *Change the target library for LPA-eligible modules*

---

Before you RECEIVE and APPLY the maintenance, use the SMP/E UCLIN facility to inform SMP/E that the modules will be moved to a new target library. Use the SMP/E control statements provided in this example:

```
SET BOUNDARY (XPFTLIB) .
UCLIN .
/* REPEAT THE NEXT STATEMENT ONE TIME FOR EACH MODULE MOVED
   TO XPFLPA, SUBSTITUTING THE MODULE NAME FOR lmodname */
REP LMOD (lmodname) SYSLIB (XPFLPA) .
ENDUCL .
```

Ensure that the dataset pointed to by the XPFLPA DD is large enough to contain all the LPA-eligible modules. If you allocate a dataset the same size as XPFLPAD, you will have sufficient space.

## *Step 2 – Set up stage 1 job*

---

You generate the jobs to install XPAF software maintenance and its associated functions in the same manner you generated the installation jobs for the base tape. The stage 1 procedure requires you to complete the #GENMNT macro parameters in the GENMNT member to generate the stage 2 jobs for software maintenance processing.

Complete these steps to execute the stage 1 job to generate the stage 2 maintenance jobs. Refer to the information in the maintenance bulletin that accompanies the maintenance tape for more tape-specific instructions.

### *Step 2A – Verify previous maintenance (Current, Not Current)*

---

Verify that all previous maintenance except APARs has been ACCEPTED by SMP/E with MPJOB105.

## Step 2B – Edit GENMNT in INSTLIB (New, Current, Not Current)

---

Edit the GENMNT member in the INSTLIB dataset. This member contains the parameters used in calling two macros: #GENMNT and #GENEND.

The #GENMNT macro parameters supply stage 2 maintenance jobs with information required for successfully installing maintenance to XPAF and its associated functions. All members containing stage 2 jobs created by this macro begin with the prefix MPJOB.

Example:

#GENMNT	X
HOLDFILE=YES,	X
SMPSRCID=,	X
TAPEUNIT=,	X
TAPEVOL= <i>vol ser</i> ,	X
TLABEL=	

In this sample of the #GENMNT macro, replace the volser variable with the VOLSER of the maintenance tape you are installing.

The TYPE parameter in the #GENEND section of GENMNT specifies TYPE=MNT to instruct the installation service macros to generate the stage 2 jobs that will apply a maintenance tape to XPAF. Do not change this value.

For more information on the #GENEND macro parameters, refer to [“#GENEND parameter definitions”](#) earlier in this chapter.

#GENMNT parameter definitions

This table provides a description for each parameter in the #GENMNT macro.

Parameter	Definition
<b>HOLDFILE (optional)</b>	<p>Used when a HOLDDATA file is supplied on the maintenance tape. Refer to the maintenance bulletin that accompanies the maintenance tape for instructions on using this parameter with the tape.</p> <p>Valid values:</p> <p>YES Generates an SMPHOLD DD statement and the HOLDDATA SMP/E keyword in the stage 2 maintenance tape RECEIVE job.</p> <p>NO Does not generate SMPHOLD controls on the stage 2 RECEIVE job.</p> <p>Default: NO</p>
<b>SMPSRCID (optional)</b>	<p>Specifies the SMP/E SOURCEID to be assigned to all PTFs or APARs received from the software maintenance tape and is used by SMP/E for maintenance selection.</p> <p>Default: None (no SOURCEID is generated).</p>
<b>TAPEUNIT (optional)</b>	<p>Specifies the tape unit name from which the maintenance tape is input.</p> <p>Default: Installation default TAPEUNIT parameter in the #GENDFLT macro.</p>
<b>TAPEVOL</b>	<p>Specifies the volume serial number of the maintenance tape (corrective or preventive) supplied by Xerox. Obtain this number from the maintenance bulletin that accompanies the maintenance tape.</p> <p>Default: None</p>
<b>TLABEL (optional)</b>	<p>Defines the type of label processing to be used on the corrective service tape. Refer to the maintenance bulletin that accompanies the maintenance tape for the correct specification of this parameter.</p> <p>Valid values:</p> <p>SL Specifies use of a standard label.</p> <p>NL Specifies use of a non-standard label.</p> <p>Default: NL</p>

### Step 3 – Execute stage 1 job (New, Current, Not Current)

---

Edit the ASMUPD member in INSTLIB as necessary. Then, complete these steps:

1. Specify **GENMNT** for the INSTYPE parameter.
2. Submit this job to generate stage 2 jobs. When stage 1 has completed successfully, all stage 2 installation jobs and sample parameters have been placed in the stage 2 library.
3. If you used INSTLIB for stage 2, reedit the library to refresh the directory and display the new members. If you used a separate library for stage 2, edit that library to display the member list.

### Step 4 – Code the SYSTEM HOLD bypass JCL (New, Current, Not Current)

---

When installing software maintenance, you should use the system hold bypass feature. If you do not use system hold bypass, any fixes that have a ++HOLD, and any fixes associated with those on hold, will not be APPLYd. The valid return codes are 08 or less.

To bypass a system hold, perform these steps:

1. Examine the maintenance bulletin for special instructions relating to fixes in HOLD status.
2. Depending on the installation step you are performing, edit the MPJOB102 (APPLY CHECK) or MPJOB103 (APPLY) member to remove the /\* and \*/ characters from this line:  
  

```
/* BYPASS(HOLDSYSTEM) */
```
3. Execute the stage 2 jobs to install the software maintenance. The fixes you removed from system hold bypass will be APPLYd along with the other fixes.



**NOTE:** If you do not remove the /\* and \*/ characters in the file, a return code of 12 is issued to indicate that fixes in SYSTEM HOLD were bypassed. If you do remove the characters, a return code of 04 is issued to indicate that fixes in SYSTEM HOLD were applied.

---

## Step 5 – Execute stage 2 jobs

---

After you complete the stage 1 maintenance jobs, the jobs to RECEIVE, APPLY, and ACCEPT XPAF maintenance are located in the stage 2 JCL library and can be submitted for execution as is. The jobs are located in member names MPJOB101 through MPJOB105.

For MPJOB102 through MPJOB105, if you receive a return code of 08, examine the messages from SMP/E to confirm that the return code was caused by missing prerequisite maintenance.



---

**NOTE:** To ensure the integrity of interrelated fixes, Xerox recommends that you RECEIVE and APPLY all fixes on a maintenance tape. Ensure that any previous maintenance has been ACCEPTed before APPLYing a maintenance tape.

---

If you experience a problem with your software, you must APPLY the entire maintenance tape before reporting the problem to Xerox Technical Support.

### Step 5A – Edit and submit MPJOB101 (New, Current, Not Current)

---

This job RECEIVES PTF maintenance on XPAF functions from the maintenance tape.

Valid return code: 00

### Step 5B – Edit and submit MPJOB102 (New, Current, Not Current)

---

This job runs an APPLY CHECK on software maintenance for functions received in step 1.

Valid return code: 00 and 04. A return code of 04 indicates that a system hold bypass was encountered.

### Step 5C – Edit and submit MPJOB103 (New, Current, Not Current)

---

This job APPLYS the software maintenance to the functions for which maintenance was RECEIVED in step 1.

Valid return code: 00 and 04. A return code of 04 indicates that a system hold bypass was encountered.

### *Step 5D – Edit and submit MPJOB104 (New, Current, Not Current)*

---

This job runs an ACCEPT CHECK on software maintenance for functions RECEIVED in step 1. This job is optional.

Valid return code: 00 and 04. A return code of 04 indicates that a system hold bypass was encountered.

### *Step 5E – Edit and submit MPJOB105 (New, Current, Not Current)*

---

This job ACCEPTs the software maintenance to the functions for which maintenance was RECEIVED in step 1. This job is optional.

Valid return code: 00 and 04. A return code of 04 indicates that a system hold bypass was encountered.

## *Step 6 – Perform post-installation procedures*

---

After you have installed the maintenance tape, review this section to determine which of the procedures applies to your site.

### *Step 6A – Complete applicable post-installation instructions*

---

This section contains instructions for special procedures that you may need to perform, depending on which XPAF options you use. After you install a maintenance tape, review this information to determine if any of the procedures apply to your site.

### Edit GENTOOL in INSTLIB (New, Current, Not Current)

Occasionally, a specific utility, sample, or job may be distributed for maintenance that requires special processing. Use the #GENTOOL macro to generate the utility, sample, or job to be used. The maintenance bulletin for the corrective or preventive maintenance tape will provide instructions on using the item.

If no special elements are required, you may ignore this macro.

To prepare the special element for use with XPAF, follow these steps:

1. Edit the GENTOOL member in the INSTLIB dataset. This member contains the parameter used in calling the #GENTOOL macro. A sample of this macro is shown below:

#GENTOOL	X
MACRO=	

The MACRO parameter identifies the macro name of the utility, sample, or job to be generated. You may enter only one macro name at a time.

2. Save the GENTOOL member of INSTLIB.
3. Edit and submit the ASMTOL member in the stage 2 library. This job adds the specified utility, sample, or job to the XPFTOOLS dataset.

### Convert CLIST files (New, Current, Not Current)

When you customize your system after applying a maintenance tape, you may convert CLIST files in the XPFCLIB dataset from FB to VB format. After copying any CLIST members you must edit and remove line numbers if they are present

### Update sample source code (Current, Not Current)

If you have made changes to any sample source distributed in XPFSAMP, examine the new samples for changes that affect your source. If there are differences, you must recustomize, reassemble, and link-edit the sample source code.

### Update sample macros (Current, Not Current)

If the maintenance tape includes updates to any of the sample macros, perform these tasks:

1. Change the macro you are currently using to match the new sample.
2. Reassemble and link-edit your user exits.

Also, review any other new macros in the sample macro library for applicability to your environment.

### *Update JES offset table (Current, Not Current)*

---

If the maintenance tape includes updates to the JES offset table (XDIOFTAB), before you start printers that use XPAF, run UMJOB101 to reassemble and link-edit XDIOFTAB. If you have applied usermod XUM0001, you must reapply it.

### *Update TABLELIB (Current, Not Current)*

---

If the maintenance tape includes updates to the TABLELIB, unload the appropriate file from the tape. For customers defaulting to letter size paper, unload the file that contains the letter size TABLELIB updates. For customers defaulting to A4 size paper, unload the file that contains the A4 TABLELIB updates.

For complete instructions on unloading these files from the tape, refer to the bulletin accompanying the maintenance tape.

### *Update PROFILES member (Current, Not Current)*

---

If you have made changes to the PROFILES member in XPFSAMP and have stored those changes in your sample library, perform these steps:

1. Examine the new sample for changes that affect your system.
2. Recustomize your printer profiles as required.
3. Store the profiles in the dataset specified by the PROFDD initialization parameter.

### *Update user exits (Current, Not Current)*

---

If you have made changes to any of the user exits and have stored those changes in XPFSAMP:

1. Examine the new samples for changes that affect your system.
2. Recustomize the sample exits in XPFSAMP as required.
3. Submit the appropriate UXJOBnn to reassemble and link-edit the user exits.



**NOTE:** If you are using the JES2 user exits XRXJ2X4 and XRXJ2X6, you must restart the JES2 MAS system with a WARM START for the new exits to take effect.

---

### Move modules to the LPA (Current, Not Current)

After you install the maintenance, select the ISPF option to MOVE (not COPY) LPA-eligible modules from XPFLOAD to an LPALST library that has been previously defined and authorized for use.

### Update JDT modules (Current, Not Current)

The JDT modules in the LPA may have been modified by the maintenance. After you have dynamically loaded the JDT modules into the MLPA, implement the changes to the JDTs by specifying the REDO option on the PARM parameter of the EXEC statement in the extended JCL proc. Otherwise, you must IPL with a CLPA.

### Use XJCF coexistence and simulation (Current, Not Current)

If you use XJCF coexistence or simulation processing, be sure to perform these steps:

- For XJCF simulation processing, reassemble and link-edit the XJCFSIM table into the XPFLOAD.
- For XJCF coexistence processing:
  1. Reapply usermod XUM0011. This action makes the XPAF extended JCL keywords compatible with the XJCF JCL keywords.
  2. Before you reapply the usermod, be sure to dump the affected modules and reverify the offsets. To apply the XPAF usermod, follow the instructions in “[Installing usermods](#)” later in this chapter.
  3. Examine the new sample source for XSLPDDDB. If necessary, recustomize your XSLPDDDB source and reassemble and link-edit the PDDDB table after applying this maintenance.

### Install maintenance for XDS (New, Current, Not Current)

All software maintenance for XDS is shipped on the maintenance tapes for XPAF. After you apply maintenance to XDS modules, you must refresh the MVS Library Lookaside address space using this command:

```
MODIFY LLA,REFRESH
```

This command updates the MVS lookaside list with the addresses of the most current XDS modules.

### *Step 6B – Perform an IPL (New, Current, Not Current)*

---

Once the software maintenance is installed, you may need to perform an IPL with CLPA on your system. An IPL will:

- Add required modules to the LPA
- Authorize required XOSF libraries
- Update the MVS link list
- Update the PPT
- Update the Subsystem Name Table
- Define printers to MVS
- Invoke updated JES parameters
- Make extended JCL support available, if requested

If you are familiar with the procedure for restarting JES and/or MVS without performing an IPL, you may use that procedure.

### *Step 6C – Verify the maintenance installation (Current, Not Current)*

---

If you have applied maintenance to an existing XPAF system, you can verify the accuracy of your software maintenance installation by executing an IVP. For more information about performing an IVP, refer to chapter 16, [“Performing an installation verification procedure.”](#)

If you are installing a new XPAF system, do not execute the IVPs at this time. Continue with the remaining installation steps, then perform the IVP as explained in chapter 16, [“Performing an installation verification procedure.”](#)

## Installing usermods

---

A user modification (usermod) is supplied with XPAF to allow you to customize the tables used by XPAF; for example, the JES offset table. You must install the usermod for the JES offset table to make XPAF operational.

The JCL required to install usermods is generated during stage 1 of the base XPAF installation. The generated JCL can be submitted without change. All usermod JCL members in the stage 2 dataset have a prefix of UMJOB. Each usermod is set up specifying REDO, so you can resubmit the original SMP/E APPLY JCL to reinstall the usermod.



**CAUTION:** If you make any modifications to your JES system, such as installing maintenance to JES, you must resubmit the job to APPLY with a REDO the JES offset table. Failure to resubmit this job may cause XOSF to abend or create unpredictable results.

---

When applying software maintenance to your system, refer to the accompanying maintenance bulletin to find out whether you need to resubmit a usermod installation job. Follow any special instructions in the user instructions.

## Checklist for installing usermods

---

As you complete each step, enter a check in the checklist table to track and record your progress.

Step	Action	Completed
1	Submit UMJOB100	
2	Submit UMJOB101	

## Step 1 – Submit UMJOB100

---

UMJOB100 uses SMP/E to RECEIVE all XPAF-required usermods. Submit UMJOB100 as is.

Valid return code: 00

## Step 2 – Submit UMJOB101

---

UMJOB101 performs an SMP/E APPLY of the JES offset table. This table supplies XPAF with the correct JES control block offsets for processing at your site. Do not make any changes to this table.

Submit UMJOB101 as is.

Valid return code: 00

Any time you upgrade your operating system or apply maintenance to your system that changes this table, you must submit this job to REDO the usermod. You must also modify your existing UMJOB101 JCL to include the correct JES2 or JES3 dataset name. Refer to the bulletin accompanying the maintenance tape for the correct dataset names.



---

**CAUTION:** The stage 1 assembly is performed without the SMPMTS dataset, which is used for JES maintenance, included in the SYSLIB statement. If JES maintenance has been APPLYd but not ACCEPTed, the JES offsets in this USERMOD module may be incorrect. Incorrect JES offsets may cause XPAF to fail or abend upon initialization or at document print time.

If such a failure occurs, add the SMPMTS dataset that contains the JES maintenance to the SYSLIB concatenation for the system on which XPAF is running. Then resubmit UMJOB101.

---

## Changing the default USERMOD name

---

You can change the default USERMOD name (XUM0001) using the UMODJOFT parameter of the #GENPROD macro, which you completed during base product installation. If you change the name of the default usermod after it has been installed, you must perform these steps:

1. Regenerate the stage 1 output.
2. RESTORE and REJECT the default usermod using SMP/E.
3. Resubmit UMJOB100 and UMJOB101.

## Installing user exits

This section lists the available XOAF and XOSF optional user exits and describes the procedure used for installing them.

- For XOAF, XPAF uses an administrative security exit.
- For XOSF, XPAF uses 10 different FSA exits, a message exit, a command exit, and a refresh security exit.

The procedure for coding these exits is described in chapter 7, “[Coding the XPAF user exits](#).”

## Available user exits

Table 3-1 identifies the available sample user exits and exit installation jobs. Enter a check in the Installed column for each user exit that you install successfully.



**NOTE:** There are multiple versions of the source code for user exits 02, 03, and 05. However, you can only install one version of each exit on your system.

Table 3-1. Available user exits

Exit point	Source member name	Function	Stage 2 member name	Installed
01	XUXIT01	FSA initialization	UXJOB01	
02	XUXIT02	Dataset begin	UXJOB02	
02	XUXIT02A	Dataset begin	UXJOB02	
02	XUXIT02C	Dataset begin	UXJOB02	
03	XUXIT03	JES record read	UXJOB03	
03	XUXIT03A	JES record read	UXJOB03	
03	XUXIT03C	JES record read	UXJOB03	
03	XUXIT03D	JES record read	UXJOB03	
04	XUXIT04	XOSF dataset open	UXJOB04	
05	XUXIT05	Separator page	UXJOB05	
05	XUXIT05A	Separator page	UXJOB05	
05	XUXIT05B	Separator page	UXJOB05	
06	XUXIT06	Resource access	UXJOB06	

Table 3-1. Available user exits (Continued)

Exit point	Source member name	Function	Stage 2 member name	Installed
07	XUXIT07	Resource download begin	UXJOB07	
08	XUXIT08	Resource download end	UXJOB08	
09	XUXIT09	SMF record	UXJOB09	
10	XUXIT10	FSA termination	UXJOB10	
11	XUXIT11	XOSF dataset close	UXJOB11	
12	XUXIT12	Writer data option	UXJOB12	
30	XUXIT30	Message suppression	UXJOB30	
31	XUXIT31	Operator command suppression	UXJOB31	
32	XUXIT32	Refresh security	UXJOB32	
—	XOAFUSEC	XOAF security exit	UXJOBSEC	

### *User exits for XDS*

---

There are no user exits specific to XDS. All valid XOSF user exits in the XDS data stream are honored as the data stream passes through XOSF.

## Checklist for installing user exits

---

After you have coded your user exits, you are ready to install them by following the procedures in this chapter. As you complete each step, enter the completion date in the checklist table to track and record your progress.

Step	Action	Date completed
1	Set up stage 1 job	
	A Edit GENUXIT in INSTLIB	
	B Edit the UEXIT parameters in GENUXIT	
2	Generate stage 2 jobs	
	A Edit ASMUPD	
	B Submit ASMUPD	
3	Execute stage 2 jobs	
	A Submit UXJOB00	
	B Submit the user exit APPLY jobs	

### Step 1 – Set up stage 1 job

---

Use the #GENUXIT macro parameters in the GENUXIT member of INSTLIB to generate stage 2 jobs that use SMP/E to assemble and link your user exit source code into a load library you specify. This load library must be accessible to XPAF.

The stage 2 member names are generated with UXJOB as the prefix and the exit number as the suffix. For example, the name of the stage 2 member that contains the JCL to install user exit 05 is UXJOB05.

Complete the steps in this section to set up and execute stage 1 jobs for user exits.

## Step 1A – Edit GENUXIT in INSTLIB

Edit the GENUXIT member in INSTLIB and complete the parameters used in calling the #GENUXIT macro. Enter the parameter values you predefined in your pre-installation worksheets.

If you need to access a private macro library that was not defined to SMP/E during XPAF installation, you must specify the UXMAC parameter in the #GENUXIT section. This causes a SYSLIB DD statement to be generated in each stage 2 user exit SMP/E job that contains all the required macro libraries. It also overrides the standard SYSLIB defined by the DDDEF statement when you installed XPAF.



Example:

```
#GENUXIT                                     X
      UMPFX=,                               X
      USEC=,                                X
      USECLNKL B=,                           X
      USECSMID=,                             X
      UXLNKL B=,                             X
      UXMAC=,                                X
      UXPFX=,                                X
      UXSRCLB=
```

### #GENUXIT parameter definitions

This table provides a description for each parameter in the #GENUXIT macro.

Parameter	Description
<b>UMPFX (optional)</b>	Specifies a 5-character name that is used as the default SYSMOD-ID prefix generated to install user exits. The number of the exit you request is appended to this character string to create a unique SYSMOD ID for each user exit you request. The character string XUX00 is generated as a default if you do not assign a value to this parameter.  Default: XUX00
<b>USEC (optional)</b>	Specifies whether the XOAF TSO user security exit will be installed. The name of this exit must be XOAFUSEC. XPFSAMP contains a sample of this exit. You should copy the sample to the library specified in the UXSRCLB parameter before you make any changes to it.  Valid values:  <div> <div>YES</div> <div>The stage 2 JCL is generated to install this user exit. Member name is UXJOBSEC.</div> </div> <div> <div>NO</div> <div>Stage 2 JCL is not generated to install this user exit.</div> </div> Default: NO

Parameter	Description
<b>USECLNKL</b> <b>B (optional)</b>	<p>Specifies a fully qualified load library name into which SMP/E links the user security module after assembly. You may specify any load library, LLA or LPA, that TSO accesses.</p> <hr/> <p> <b>NOTE:</b> For security, Xerox strongly recommends that you use a secured LNKST library for this module.</p> <hr/> <p>Default: XPAFLIB</p>
<b>USECSMID</b> <b>(optional)</b>	<p>Specifies the SYSMOD ID to SMP/E for processing. The XOAFUSEC exit will be RECEIVED and APPLYd under this SYSMOD ID. If you omit this parameter, the SYSMOD ID defaults to XUX0100.</p> <p>Default: XUX0100</p>
<b>UXLNKLB</b> <b>(optional)</b>	<p>Specifies the load library to which SMP/E links your exit modules after assembly. You may specify any load library, LLA or LPA, that XPAF is able to access.</p> <hr/> <p> <b>NOTE:</b> If this library is not in the LLA or LPA, it must be authorized and added to the XPAF start-up proc STEPLIB.</p> <hr/> <p>Default: XPFLOAD</p>
<b>UXMAC</b> <b>(optional)</b>	<p>Defines a user macro library that is required for assembling the user exits. Each stage 2 job generates a SYSLIB DD statement that contains all macro libraries, and overrides the DDDEF SYSLIB statement defined to SMP/E during installation. If you do not specify this parameter, no overriding SYSLIB DD statement is generated.</p> <p>Default: None</p>
<b>UXPFX</b> <b>(optional)</b>	<p>Specifies a 1- to 6-character name that is used as the default source member and load module name prefix generated to install user exits. The number of the exit you request is appended to the end of this character string to create a unique source and load module name for each exit you request.</p> <p>This parameter is overridden for any user exit generated that has a value specified for the source name in the #UEXIT macro. The character string XUXIT is generated as the default if you do not assign a value to this parameter.</p> <p>Default: XUXIT</p>
<b>UXSRCLB</b>	<p>Specifies a PDS library that contains your exit source code. Source member names in this library must match source module names as defined by the UXPFX parameter or the #UEXIT macro. This library is not distributed with XPAF.</p> <p>Default: None</p>

## Step 1B – Edit the UEXIT parameters in GENUXIT

Edit the GENUXIT member in the installation library dataset to complete the parameters used in calling the #UEXIT macros. This sample member contains one default #UEXIT entry for every XPAF user exit.

You must code a separate #UEXIT macro within GENUXIT for each user exit you install. To install one or more user exits, remove the asterisk ( \* ) from the beginning of the line defining the user exit you will install. If necessary, add any additional #UEXIT statements needed for your site.

### #UEXIT parameter definitions

This table provides a description for each parameter in the #UEXIT macro.

Macro	Description						
#UEXIT	<p>Defines the user exit to be generated.</p> <p>Valid values:</p> <table> <tr> <td><i>nn</i></td><td>The 2-digit number of the exit for which you want to generate a stage 2 SMP/E installation job.</td></tr> <tr> <td><i>mmmmmmm</i></td><td>The 7-character name you want to call the SMP/E-installed SYSMOD. This value is optional.</td></tr> <tr> <td><i>ssssssss</i></td><td>The 1- to 8-character name of the source module used to generate the user exit. This is the name of the member that SMP/E will assemble and link into a load library. This value is optional.</td></tr> </table> <p>When using a source library other than the XPFSAMP library, the user exit name specified cannot be the same as any of the sample source members in XPFSAMP.</p> <p>Default: The numbers for the XOAF user exits.</p> <p>Examples:</p> <p>This example generates user exit #01 with default SYSMOD and source names.</p> <pre>#UEXIT 01</pre> <p>This example generates user exit #01 with a SYSMOD ID of UXMOD01 and the default source name.</p> <pre>#UEXIT (01,UXMOD01)</pre> <p>This example generates user exit #01 with a SYSMOD ID name and a source/load module name of UXSRCE01.</p> <pre>#UEXIT (01,,UXSRCE01)</pre> <p>This example generates user exit #01 with a SYSMOD ID of UXMOD01 and a source/load module name of UXSRCE01.</p> <pre>#UEXIT (01,UXMOD01,UXSRCE01)</pre>	<i>nn</i>	The 2-digit number of the exit for which you want to generate a stage 2 SMP/E installation job.	<i>mmmmmmm</i>	The 7-character name you want to call the SMP/E-installed SYSMOD. This value is optional.	<i>ssssssss</i>	The 1- to 8-character name of the source module used to generate the user exit. This is the name of the member that SMP/E will assemble and link into a load library. This value is optional.
<i>nn</i>	The 2-digit number of the exit for which you want to generate a stage 2 SMP/E installation job.						
<i>mmmmmmm</i>	The 7-character name you want to call the SMP/E-installed SYSMOD. This value is optional.						
<i>ssssssss</i>	The 1- to 8-character name of the source module used to generate the user exit. This is the name of the member that SMP/E will assemble and link into a load library. This value is optional.						

## Step 2 – Generate stage 2 jobs

---

To generate the stage 2 jobs used for installing user exits, perform these steps.

### Step 2A – Edit ASMUPD

---

Edit the ASMUPD member in INSTLIB. Specify **GENUXIT** for the INSTYPE parameter.

### Step 2B – Submit ASMUPD

---

Submit the ASMUPD job to generate stage 2 jobs for installing user exits.

## Step 3 – Execute stage 2 jobs

---

You can find the JCL for each job listed below in the stage 2 library after stage 1 is complete. Submit the jobs in the specified order to ensure the user exits are installed properly.

Within each stage 2 member, the job name is generated by the #GENJBCD macro that you completed during the installation of XPAF. For instructions on completing the #GENJBCD macro, refer to [“Installing the base product”](#) earlier in this chapter.

### Step 3A – Submit UXJOB00

---

This job RECEIVES the XPAF user exits generated in stage 1.

Valid return code: 00

### Step 3B – Submit the user exit APPLY jobs

---

An SMP/E APPLY job is generated for each user exit you requested in the #UEXIT macros. Submit all APPLY jobs and make sure you receive a condition code of 00 for all jobs. If an assembly error occurs for a particular exit, correct the code and resubmit the appropriate APPLY job.

## User exit installation examples

---

This section contains examples of completed user exit macros to illustrate the effects of definitions you apply during exit installation. This section does not contain any procedures you need to perform; it is for reference only.

### Example 1 of #GENEXIT

---

This example macro generates stage 2 JCL to install user exits 01, 05, and 30:

#GENEXIT	X
UMPFX=USM00,	X
USEC=YES,	X
USECLNKLB=,	X
USECSMID=,	X
UXLNKLB=,	X
UXMAC=,	X
UXPFX=USRM0D,	X
UXSRCLB=SYS4. USEREXIT. SOURCE	
#UEXIT 01	
#UEXIT (05, USXIT05, UEXIT5)	
#UEXIT (30, UXT0030)	

These are the specifications that will result for each user exit generated by the above example:

- Stage 2 JCL is generated to install user exits 01, 05, and 30 (member names UXJOB00, UXJOB01, UXJOB05, and UXJOB30).
- Source for all exits is contained in SYS4.USEREXIT.SOURCE.
- Load modules are link-edited into user.XPFL0AD.
- No user-specific macro library is used.
- SYSMOD ID for exit 01 is USM0001.
- SYSMOD ID for exit 05 is USXIT05.
- SYSMOD ID for exit 30 is UXT0030.
- Source and load module name for exit 01 is USRM0D01.
- Source and load module name for exit 05 is UEXIT5.
- Source and load module name for exit 30 is USRM0D30.

## Example 2 of #GENUXIT

This example macro will generate stage 2 JCL to install user exits 03, 09, 10, and 31:

#GENUXIT	X
UMPFX=USM00,	X
USEC=,	X
USECLNKLB=,	X
USECSMID=,	X
UXLNKLB=SYS3. USER. LINKLIB,	X
UXMAC=SYS4. USER. MACLIB,	X
UXPFX=USRM0D,	X
UXSRCLB=SYS4. USEREXIT. SOURCE	
#UEXIT 03	
#UEXIT 09	
#UEXIT 10	
#UEXIT 31	

These are the specifications that will result for each user exit generated by the above example:

- Stage 2 JCL is generated to install user exits 03, 09, 10, and 31 (member names UXJOB00, UXJOB03, UXJOB09, UXJOB10, and UXJOB31).
- Source for all exits is contained in SYS4.USEREXIT.SOURCE.
- Load modules are link-edited into SYS3.USER.LINKLIB.
- All stage 2 APPLY jobs have a SYSLIB DD statement containing all macro libraries used for user exit assembly with SYS4.USER.MACLIB being first in the concatenation.
- SYSMOD ID for exit 03 is USM000003.
- SYSMOD ID for exit 09 is USM000009.
- SYSMOD ID for exit 10 is USM000010..
- SYSMOD ID for exit 31 is USM000031.
- Source and load module name for exit 03 is USRM0D03.
- Source and load module name for exit 09 is USRM0D09.
- Source and load module name for exit 12 is USRM0D12.
- Source and load module name for exit 31 is USRM0D31.



## 4. *Installing resources*

---

XPAF uses a variety of resources for printing depending upon the types of jobs you print. Resources include fonts, forms, images, and logos. Occasionally, Xerox enhances the resources and distributes a new resource tape.

This chapter provides instructions for installing the XPAF resources. For instructions on loading or converting resources, refer to [Section Three: Managing Resources with XPAF](#).

### *Resource installation tape content*

---

Table 4-1 lists the files included on the base resource tape and their contents.

Table 4-1. Base resource tape files and contents

File	Contents
1	AFPFONTS
2	PAGEFORM
3	PDLLIB
4	CLOGOLIB
5	CIMGLIB
6	CFORMLIB
7	DIMGLIB
8	DFORMLIB
9	PFONTLIB
10	IVPDATA
11	IVPRESC
12	IVPXOAF

Table 4-2 lists the files included on the centralized font tape and their contents.

**Table 4-2. Centralized font tape files and contents**

File	Contents
1	TABLELIB
2	A4 updates to TABLELIB
3	CFONTLIB

Table 4-3 lists the files included on the decentralized font tape and their contents.

**Table 4-3. Decentralized font tape files and contents**

File	Contents
1	TABLELIB
2	A4 updates to TABLELIB
3	DFONTLIB

## Checklist for installing resources

---

Follow the procedures shown in this checklist to install the resources distributed with XPAF. As you complete each step, enter the completion date in the checklist table to track and record your progress. The steps for each procedure are explained later in this chapter.



**NOTE:** Review the maintenance bulletin accompanying the most current maintenance tape to determine if you need to run any special procedures before installing the resource tape.

---

Step	Action	Date completed
1	Set up stage 1 job	
	A Calculate the size of your resource libraries	
	B Edit GENRSC in INSTLIB	
2	Generate stage 2 jobs	
	A Edit ASMUPD	
	B Submit ASMUPD	
3	Submit resource installation jobs	
	A Submit RJOB101	
	B Submit RJOB102	
	C Submit RJOB103	
	D Submit RJOB104	
	E Edit and submit RJOB105	

## Step 1 – Set up stage 1 job

Stage 1 consists of setting up the resource installation macro to reflect your site's resource library requirements. Before completing the macro parameters, calculate the size of your resource libraries using the formulas provided in this section.

### Step 1A – Calculate the size of your resource libraries

When setting up your stage 1 job, you must define specific block sizes for your resource libraries in the #GENRSC macro. Follow these steps to calculate the size of your form, image, and PDL libraries:



**NOTE:** Because the XPAF installation uses a different method to install the centralized and decentralized font libraries, you must specify the exact size of the files to be installed. The file sizes are defined in the parameter definitions later in this chapter.

1. Determine the number of resources you will be storing in each native resource library.
2. Multiply the number of resources by the average number of records required for each resource type:

Resource type	#GENRSC parameter	Average # of records
Centralized forms	SIZCFORM	2
Centralized images	SIZCIMG	4
Decentralized forms	SIZDFORM	2
Decentralized images	SIZDIMG	6
PCL fonts	SIZPFONT	6
PCL forms	SIZPFORM	3
PCL images	SIZPIMG	8
PDLLIB	SIZPLIB	$2^1/10^2$

<sup>1</sup> This value is difficult to calculate since one PDL file will contain many members. For example, one JSL file may contain several PDEs, and each PDE will result in a PDLLIB member using an average of 2 records. For a rough calculation, assume that three lines of PDL will create one member.

<sup>2</sup> Include an additional 10 records for each 3 lines of PDL if you will be using PDL object management.



**NOTE:** These averages may vary from site to site.

3. Add an additional amount for future expansion. For example, you may add an additional 20%.
4. Enter the values into the appropriate #GENRSC parameters.

### Example

---

Rainbow Office Supplies currently has 200 centralized forms and 50 centralized images and 120 lines of PDL. They will not be using the PDL object management feature. They print their documents on both decentralized and PCL-capable printers. The calculations for their native resource libraries would be:

$\text{CFORMLIB} = 200 \times 2 = 400 + 20\% = 480$

$\text{CIMGLIB} = 50 \times 4 = 200 + 20\% = 240$

$\text{DFORMLIB} = 200 \times 2 = 400 + 20\% = 480$

$\text{DIMGLIB} = 50 \times 6 = 300 + 20\% = 360$

$\text{PFONTLIB} = 100 \times 6 = 600 + 20\% = 720$

$\text{PFORMLIB} = 200 \times 3 = 600 + 20\% = 720$

$\text{PIMGLIB} = 50 \times 8 = 400 + 20\% = 480$

$\text{PDLLIB} = 120/3 \times 2 = 80 + 20\% = 96$

## Step 1B – Edit the GENRSC in INSTLIB

Edit the GENRSC member in the INSTLIB dataset and complete the parameters used to call the #GENRSC macro with your site-specific values.

The parameters in this macro supply:

- Resource dataset names required by stage 1 installation service macros for generating XPAF execution samples.
- Information required by the stage 2 resource download jobs to install XPAF resources successfully. The TYPE=RSC parameter in the #GENEND macro instructs the installation service macros to generate stage 2 jobs that allocate and offload resources from the resource tape. Do not change this parameter.


To print a record of the values you specified for the #GENRSC macro parameters, follow the instructions provided in [“Step 6 – Print the installation service macros \(optional\)”](#) in chapter 3, [“SMP/E installation.”](#) Substitute GENRSC for GENINST.



Example:


```
#GENRSC
DUNI T=, X
DVOLSER=vol ser, X
HLQ=resource-prefi x, X
HLQTAPE=, X
HLOVSAM=, X
I VP=, X
OPTI ONS=, X
SI ZCFONT=, X
SI ZCFORM=, X
SI ZCI MG=, X
SI ZDFONT=, X
SI ZDFORM=, X
SI ZDI MG=, X
SI ZLOGO=, X
SI ZPDL=, X
SI ZPFONT=, X
SI ZPFORM=, X
SI ZPI MG=, X
SMS=, X
SMSVSAM=, X
VSMVOL=, X
VSMVOLCF=, X
VSMVOLDF=
```



## #GENRSC parameter definitions

This table provides a description for each parameter in the #GENRSC macro.

Parameter	Description
<b>DUNIT (optional)</b>	Specifies the UNIT value used for non-VSAM resource files during resource file allocation. This parameter is required unless the DUNIT parameter of the #GENDFLT macro is specified.  Default: None
<b>DVOLSER</b>	Specifies a specific volume serial number of the DASD device used for allocation of the XPAF resource files. If you do not specify a value for DVOLSER, the value specified for DUNIT is used, and no VOLSER DD card parameter is generated.  Default: None
<b>HLQ (optional)</b>	Specifies the high-level qualifier used for all XPAF resource datasets during file allocation.  Default: The value you specified for the HLQ parameter in the #GENDFLT macro.
<b>HLQTAPE</b>	Specifies the high-level qualifier of the dataset names found on the resource tapes supplied with the product.  Default: TRESA.XPAF30   <b>NOTE:</b> If you are installing a resource update tape (not a resource tape distributed with the XPAF base product), see the XPAF resource bulletin accompanying the tape(s) for the value to be entered for this parameter.
<b>HLQVSAM (optional)</b>	Specifies the high-level qualifier used for all VSAM resource datasets during resource file allocation  Default: The value you specified for the HLQ parameter in this macro or its default if you did not specify one.

Parameter	Description
<b>IVP (optional)</b>	<p>Specifies whether the IVP datasets are offloaded with the rest of the resource datasets and IVP jobs are created as batch jobs.</p> <p>Valid values:</p> <p>YES            The IVP datasets are offloaded from the resource tape onto a storage unit specified by this macro. IVPJOB01 through IVPJOB06 are created as batch jobs and placed into the stage 2 library. The IVP output print class defaults to the class specified for the SYSOUT parameter in the #GENDFLT macro.</p> <p>(YES,<i>class</i>)   The IVP datasets are offloaded the same as when you specify YES only. IVPJOB01 through IVPJOB06 are created as batch jobs and placed into the stage 2 library. The IVP output print class is specified by <i>class</i>, a one-byte value.</p> <hr/> <p> <b>NOTE:</b> If you do not specify a class, the value specified for OCLASS in the #GENDFLT macro is used.</p> <hr/> <p>NO            The IVP datasets are not offloaded from the resource tape. No IVP test jobs are created.</p> <p>Default: YES</p> <hr/> <p> <b>NOTE:</b> To print IVPs on A4 paper, you must specify <b>A4</b> for the OPTIONS parameter in this macro, or enter <b>Y</b> in the 'Using A4 paper?' field in the XOAF Installation Verification Procedure option.</p> <hr/>

Parameter	Description
<b>OPTIONS</b>	<p>Specifies the options available when you install resources. You may specify more than one option for this parameter.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>A4      Use A4 as the default paper size for IVPs and paper-related tables.</li> <li>B        Install base resources (forms, images).</li> <li>C        Install centralized fonts (standard format).</li> <li>D        Install decentralized fonts (standard format).</li> <li>T        Install TABLELIB.</li> <li>CI       Install core interchange fonts.</li> <li>NOPCL   Do not allocate PCL resource libraries (PFONTLIB, PFORMLIB, PIMAGELIB).</li> <li>NOSRL   Do not split RJOB103 into separate load jobs (RJOB103B, RJOB103C, and RJOB103D); instead, generate one job only (RJOB103).</li> <li>RR       Use round reel tapes.</li> </ul> <p>Default: (B,C,D,T) (install each option).</p> <hr/> <p> <b>NOTE:</b> If you specify B, C, D, or T individually, the other default options are not automatically installed. For example, if you change the value from (B,C,D,T) to C, only the centralized fonts will be installed.</p> <hr/> <p>Examples:</p> <ul style="list-style-type: none"> <li>OPTIONS=C            Installs centralized fonts only.</li> <li>OPTIONS=(D,CI)      Installs decentralized core interchange fonts.</li> <li>OPTIONS=(B,C,D,T,NOPCL)                              Installs base resources, centralized and decentralized fonts, and TABLELIB, but does not allocate PCL resource libraries.</li> <li>OPTIONS=(B,C,T,A4)                              Installs base resources, centralized fonts, and TABLELIB, generates IVPs to print on A4 paper, and sets the default paper name to A4 for the varying paper size tables and cluster mapping tables.</li> </ul>

Parameter	Description								
<b>SIZCFONT (optional)</b>	<p>Specifies the size of the CFONTLIB allocated by the resource allocation job. Use this parameter if your library needs to be a size other than the defaults generated by this installation.</p> <p>Default: 35000 records (standard font installation). 100080 records (if you specified OPTIONS=CI).</p> <hr/> <p> <b>CAUTION:</b> Because the centralized font library is offloaded via IDCAMS REPRO, you must define the actual size of the library as distributed on the resource tape. You can use a numeric value to create a CFONTLIB with up to 999,999 records. However, you should only enter a value for this parameter if you are instructed to do so by a resource bulletin accompanying a resource tape.</p> <hr/>								
<b>SIZCFORM (optional)</b>	<p>Specifies the size of the CFORMLIB allocated by the resource allocation job. Use this parameter if you need more space than the default size for this dataset. These options represent minimum recommended values.</p> <p>Valid values:</p> <table> <tr> <td>1</td><td>66 records (or 6 3380 tracks).</td></tr> <tr> <td>2</td><td>198 records (or 18 3380 tracks).</td></tr> <tr> <td>3</td><td>396 records (or 36 3380 tracks).</td></tr> <tr> <td><i>value</i></td><td>The actual number of records to allocate.</td></tr> </table> <p>Default: 1</p>	1	66 records (or 6 3380 tracks).	2	198 records (or 18 3380 tracks).	3	396 records (or 36 3380 tracks).	<i>value</i>	The actual number of records to allocate.
1	66 records (or 6 3380 tracks).								
2	198 records (or 18 3380 tracks).								
3	396 records (or 36 3380 tracks).								
<i>value</i>	The actual number of records to allocate.								
<b>SIZCIMG (optional)</b>	<p>Specifies the size of the CIMGLIB allocated by the resource allocation job. Use this parameter if you need more space than the default size for this dataset. These options represent minimum recommended values.</p> <p>Valid values:</p> <table> <tr> <td>1</td><td>616 records (or 56 3380 tracks).</td></tr> <tr> <td>2</td><td>1848 records (or 168 3380 tracks).</td></tr> <tr> <td>3</td><td>3696 records (or 336 3380 tracks).</td></tr> <tr> <td><i>value</i></td><td>The actual number of records to allocate.</td></tr> </table> <p>Default: 1</p>	1	616 records (or 56 3380 tracks).	2	1848 records (or 168 3380 tracks).	3	3696 records (or 336 3380 tracks).	<i>value</i>	The actual number of records to allocate.
1	616 records (or 56 3380 tracks).								
2	1848 records (or 168 3380 tracks).								
3	3696 records (or 336 3380 tracks).								
<i>value</i>	The actual number of records to allocate.								
<b>SIZDFONT (optional)</b>	<p>Specifies the size of the DFONTLIB allocated by the resource allocation job. Use this parameter if your library needs to be a size other than the defaults generated by this installation.</p> <p>Default: 35000 records (standard font installation). 100160 records (if you specified OPTIONS=CI).</p> <hr/> <p> <b>CAUTION:</b> Because the decentralized font library is offloaded via IDCAMS REPRO, you must define the actual size of the library as distributed on the resource tape. You can use a numeric value to create a DFONTLIB with up to 999,999 records. However, you should only enter a value for this parameter if you are instructed to do so by a resource bulletin accompanying a resource tape.</p> <hr/>								

Parameter	Description								
<b>SIZDFORM (optional)</b>	<p>Specifies the size of the DFORMLIB allocated by the resource allocation job. Use this parameter if you need more space than the default size for this dataset.</p> <p>Valid values:</p> <table> <tr> <td>1</td><td>300 records (or 28 3380 tracks).</td></tr> <tr> <td>2</td><td>600 records (or 56 3380 tracks).</td></tr> <tr> <td>3</td><td>1200 records (or 112 3380 tracks).</td></tr> <tr> <td><i>value</i></td><td>The actual number of records to allocate.</td></tr> </table> <p>Default: 1</p>	1	300 records (or 28 3380 tracks).	2	600 records (or 56 3380 tracks).	3	1200 records (or 112 3380 tracks).	<i>value</i>	The actual number of records to allocate.
1	300 records (or 28 3380 tracks).								
2	600 records (or 56 3380 tracks).								
3	1200 records (or 112 3380 tracks).								
<i>value</i>	The actual number of records to allocate.								
<b>SIZDIMG (optional)</b>	<p>Specifies the size of the DIMGLIB allocated by the resource allocation job. Use this parameter if you need more space than the default size for this dataset. These options represent minimum recommended values.</p> <p>Valid values:</p> <table> <tr> <td>1</td><td>1200 records (or 120 3380 tracks).</td></tr> <tr> <td>2</td><td>3600 records (or 360 3380 tracks).</td></tr> <tr> <td>3</td><td>7500 records (or 750 3380 tracks).</td></tr> <tr> <td><i>value</i></td><td>The actual number of records to allocate.</td></tr> </table> <p>Default: 1</p>	1	1200 records (or 120 3380 tracks).	2	3600 records (or 360 3380 tracks).	3	7500 records (or 750 3380 tracks).	<i>value</i>	The actual number of records to allocate.
1	1200 records (or 120 3380 tracks).								
2	3600 records (or 360 3380 tracks).								
3	7500 records (or 750 3380 tracks).								
<i>value</i>	The actual number of records to allocate.								
<b>SIZLOGO (optional)</b>	<p>Specifies the size of the CLOGOLIB allocated by the resource allocation job. Use this parameter if you need more space than the default size for this dataset. These options represent minimum recommended values.</p> <p>Valid values:</p> <table> <tr> <td>1</td><td>66 records (or 6 3380 tracks).</td></tr> <tr> <td>2</td><td>198 records (or 18 3380 tracks).</td></tr> <tr> <td>3</td><td>396 records (or 36 3380 tracks).</td></tr> <tr> <td><i>value</i></td><td>The actual number of records to allocate.</td></tr> </table> <p>Default: 1</p>	1	66 records (or 6 3380 tracks).	2	198 records (or 18 3380 tracks).	3	396 records (or 36 3380 tracks).	<i>value</i>	The actual number of records to allocate.
1	66 records (or 6 3380 tracks).								
2	198 records (or 18 3380 tracks).								
3	396 records (or 36 3380 tracks).								
<i>value</i>	The actual number of records to allocate.								
<b>SIZPDL (optional)</b>	<p>Specifies the size of the PDLLIB allocated by the resource allocation job. Use this parameter if you need more space than the default size for this dataset. These options represent minimum recommended values.</p> <p>Valid values:</p> <table> <tr> <td>1</td><td>270 records (or 13 3380 tracks).</td></tr> <tr> <td>2</td><td>540 records (or 26 3380 tracks).</td></tr> <tr> <td>3</td><td>1080 records (or 52 3380 tracks).</td></tr> <tr> <td><i>value</i></td><td>The actual number of records to allocate.</td></tr> </table> <p>Default: 1</p>	1	270 records (or 13 3380 tracks).	2	540 records (or 26 3380 tracks).	3	1080 records (or 52 3380 tracks).	<i>value</i>	The actual number of records to allocate.
1	270 records (or 13 3380 tracks).								
2	540 records (or 26 3380 tracks).								
3	1080 records (or 52 3380 tracks).								
<i>value</i>	The actual number of records to allocate.								

Parameter	Description								
<b>SIZPFONT (optional)</b>	<p>Specifies the size of the PFONTLIB allocated by the resource allocation job. Use this parameter if you need more space than the default size for this dataset. These options represent minimum recommended values.</p> <p>Valid values:</p> <table> <tr> <td>1</td><td>8000 records (or 667 3380 tracks).</td></tr> <tr> <td>2</td><td>16000 records (or 1334 3380 tracks).</td></tr> <tr> <td>3</td><td>32000 records (or 2667 3380 tracks).</td></tr> <tr> <td><i>value</i></td><td>The actual number of records to allocate.</td></tr> </table> <p>Default: 1</p>	1	8000 records (or 667 3380 tracks).	2	16000 records (or 1334 3380 tracks).	3	32000 records (or 2667 3380 tracks).	<i>value</i>	The actual number of records to allocate.
1	8000 records (or 667 3380 tracks).								
2	16000 records (or 1334 3380 tracks).								
3	32000 records (or 2667 3380 tracks).								
<i>value</i>	The actual number of records to allocate.								
<b>SIZPFORM (optional)</b>	<p>Specifies the size of the PFORMLIB allocated by the resource allocation job. Use this parameter if you need more space than the default size for this dataset. These options represent minimum recommended values.</p> <p>Valid values:</p> <table> <tr> <td>1</td><td>45 records (or 4 3380 tracks).</td></tr> <tr> <td>2</td><td>105 records (or 9 3380 tracks).</td></tr> <tr> <td>3</td><td>225 records (or 19 3380 tracks).</td></tr> <tr> <td><i>value</i></td><td>The actual number of records to allocate.</td></tr> </table> <p>Default: 1</p>	1	45 records (or 4 3380 tracks).	2	105 records (or 9 3380 tracks).	3	225 records (or 19 3380 tracks).	<i>value</i>	The actual number of records to allocate.
1	45 records (or 4 3380 tracks).								
2	105 records (or 9 3380 tracks).								
3	225 records (or 19 3380 tracks).								
<i>value</i>	The actual number of records to allocate.								
<b>SIZPIMG (optional)</b>	<p>Specifies the size of the PIMGLIB allocated by the resource allocation job. Use this parameter if you need more space than the default size for this dataset. These options represent minimum recommended values.</p> <p>Valid values:</p> <table> <tr> <td>1</td><td>315 records (or 27 3380 tracks).</td></tr> <tr> <td>2</td><td>930 records (or 78 3380 tracks).</td></tr> <tr> <td>3</td><td>1875 records (or 157 3380 tracks).</td></tr> <tr> <td><i>value</i></td><td>The actual number of records to allocate.</td></tr> </table> <p>Default: 1</p>	1	315 records (or 27 3380 tracks).	2	930 records (or 78 3380 tracks).	3	1875 records (or 157 3380 tracks).	<i>value</i>	The actual number of records to allocate.
1	315 records (or 27 3380 tracks).								
2	930 records (or 78 3380 tracks).								
3	1875 records (or 157 3380 tracks).								
<i>value</i>	The actual number of records to allocate.								

Parameter	Description						
<b>SMS (optional)</b>	<p>Specifies the default SMS Storage and/or Management Class used for all non-VSAM allocated datasets generated by the resource installation process. Using this parameter signals the generation of SMS keywords in the DD statements. This allows your system to place the datasets in user-defined storage areas controlled by the operating system.</p> <p>This parameter overrides any default class assignment specified in the #GENDFLT macro.</p> <p>Valid values:</p> <table> <tr> <td>YES</td><td>SMS uses the system ACS routines for allocation of datasets.</td></tr> <tr> <td><i>storclass</i></td><td>SMS uses the user-defined storage class for allocation of datasets.</td></tr> <tr> <td><i>mgmtclass</i></td><td>SMS uses the user-defined management class for allocation of datasets.</td></tr> </table> <p>Default: None</p> <p>Examples:</p> <pre>SMS=<i>storclass</i> SMS=(<i>storclass</i>,<i>mgmtclass</i>) SMS=(,<i>mgmtclass</i>)</pre>	YES	SMS uses the system ACS routines for allocation of datasets.	<i>storclass</i>	SMS uses the user-defined storage class for allocation of datasets.	<i>mgmtclass</i>	SMS uses the user-defined management class for allocation of datasets.
YES	SMS uses the system ACS routines for allocation of datasets.						
<i>storclass</i>	SMS uses the user-defined storage class for allocation of datasets.						
<i>mgmtclass</i>	SMS uses the user-defined management class for allocation of datasets.						
<b>SMSVSAM (optional)</b>	<p>Specifies the SMS Storage and/or Management Class used for all SMP VSAM cluster definitions generated by the resource installation process. Using this parameter signals the generation of SMS keywords in the DEFINE statements. This allows your system to place the datasets in user-defined storage areas controlled by the operating system.</p> <p>This parameter overrides any default class assignment specified in the #GENDFLT macro.</p> <p>Valid values:</p> <table> <tr> <td>YES</td><td>SMS uses the system ACS routines for allocation of datasets.</td></tr> <tr> <td><i>storclass</i></td><td>SMS uses the user-defined storage class for allocation of datasets.</td></tr> <tr> <td><i>mgmtclass</i></td><td>SMS uses the user-defined management class for allocation of datasets.</td></tr> </table> <p>Default: None</p> <p>Examples:</p> <pre>SMS=<i>storclass</i> SMS=(<i>storclass</i>,<i>mgmtclass</i>) SMS=(,<i>mgmtclass</i>)</pre>	YES	SMS uses the system ACS routines for allocation of datasets.	<i>storclass</i>	SMS uses the user-defined storage class for allocation of datasets.	<i>mgmtclass</i>	SMS uses the user-defined management class for allocation of datasets.
YES	SMS uses the system ACS routines for allocation of datasets.						
<i>storclass</i>	SMS uses the user-defined storage class for allocation of datasets.						
<i>mgmtclass</i>	SMS uses the user-defined management class for allocation of datasets.						
<b>VSMVOL</b>	<p>Specifies the volume serial number to use for VSAM resource files. This parameter is required unless you specify the DVOLSER or SMSVSAM parameters.</p> <p>Default: None</p>						

Parameter	Description
<b>VSMVOLCF (optional)</b>	Specifies the volume serial number of the DASD volume used for allocating the native centralized font library during resource installation. This parameter is optional if you have specified a value for SMSVSAM or DVOLSER.  Default: The same value used for VSMVOL.
<b>VSMVOLDF (optional)</b>	Specifies the volume serial name of the DASD volume used for allocating the native decentralized font library during resource installation. This parameter is optional if you have specified a value for SMSVSAM or DVOLSER.  Default: The same value used for VSMVOL.

## Step 2 – Generate stage 2 jobs

---

To generate the stage 2 resource installation jobs, perform these steps.

### Step 2A – Edit ASMUPD

---

Edit the ASMUPD member in INSTLIB. Specify **GENRSC** for the INSTYPE parameter.

### Step 2B – Submit ASMUPD

---

Submit the ASMUPD job to generate stage 2 jobs.

When stage 1 has completed successfully, all stage 2 installation jobs and sample parameters have been placed in the stage 2 library. If a separate library was used for stage 2, edit that library to display the member list. If INSTLIB was used for stage 2, reedit the library to refresh the directory and display the new members.

## Step 3 – Submit resource installation jobs

---

Submit the resource installation jobs for execution as is.

### Step 3A – Submit RJOB101

---

RJOB101 deletes any existing product resource datasets, and on the first execution results in an internal condition code of 08, reset to 0. The job then defines and allocates all required resource datasets.

Valid return code: 00

### Step 3B – Submit RJOB102

---

RJOB102 initializes native datasets defined by RJOB101.

Valid return code: 00

### Step 3C – Submit RJOB103x

---

XPAF uses three resource load jobs to load resources from the resource tape to the native datasets defined in RJOB101:

- RJOB103B, which performs these actions:
  - Loads base resources
  - Loads from the resource tape any non-native dataset resources required for XPAF printing
  - Loads and defines the IVP datasets, if selected
- RJOB103C, which loads TABLELIB and/or centralized fonts
- RJOB103D, which loads TABLELIB and/or decentralized fonts

If you run both RJOB103C and RJOB103D, TABLELIB will be loaded only during RJOB103C.

You must submit each of these jobs separately. However, if you specify `OPTIONS=NOSRL` in the `#GENRSC` macro, the three jobs are combined into one, and you only need to submit that one job (RJOB103).

Valid return code: 00

## Step 3D – Submit RJOB104

---

RJOB104 copies the skeleton XINSXOAF and XINSXOSF members from the stage 2 library to the XINPARM dataset and initializes the XOAF and XOSF logging datasets. After this job is complete, you can edit the members from XINPARM to tailor the parameters to meet your site's needs.

Valid return code: 00

## Step 3E – Edit and submit RJOB105 (optional)

---

RJOB105 creates or modifies the XPAF font tables to correspond to AFP fonts. Edit and submit RJOB105 if you plan on running AFP data streams through XPAF. You will need to rerun RJOB105 any time changes are made to the AFP or PSF font libraries.

### Edit RJOB105

---

Edit RJOB105:

- Change the user ID in the statement PARM=(userid) to your TSO user ID or a single qualifier prefix for which your ID is authorized to access a dataset.
- Using the CONVERT statements under SYSIN as an example, place a CONVERT statement for each dataset that was defined in the IBMFONT DD statement found in the XOSF start-up proc. You must place the CONVERT statements in the reverse order that they appear in the DD specification of the XOSF start-up proc.

Because this job issues many informational messages, you may want to set SLOG=N in the XINSXOAF member of XINPARM before submitting this job. To check for errors during conversion, view the messages in the XOAFLOG or the SYSLOG, whichever is applicable.

### Submit RJOB105

---

RJOB105 creates or updates the CPGID, FGID, XPAFCFN, XPAFIFW, XPAFIFW3 tables and updates the XPAFE2A and XPAFEFW tables.

Valid return code: 00 or 04

## 5. Customizing your system

---

This chapter describes the steps required for customizing your XPAF system. The procedure for each step is discussed within a separate section of this chapter.

### Overview

---

This section provides three diagrams which relate to the various steps required for customizing your system. Each diagram includes samples of the members which you must modify to customize XPAF for your site.

### *Customizing XPAF for use with Xerox printers*

---

The figures shown on the following pages show sample JCL and datasets used when you customize XPAF for use with your Xerox printers:

- Figure 5-1 shows how the various JES and MVS procedures and definitions relate to XPAF procedures and definitions for centralized printers. The example shown is based on a JES2 installation.
- Figure 5-2 shows many of the same elements as the previous figure, but is tailored for setting up decentralized printers. The elements key to setting up decentralized printers are highlighted with a bold border. You must also configure a communications interface/protocol converter for the specified printer (not shown in this figure).
- While figure 5-3 looks like figure 5-2, it shows the mapping for PCL resource libraries instead of decentralized libraries. You also must configure a communications interface/protocol converter for the specified printer (not shown in this figure).



---

**NOTE:** The letters shown on the figures do not imply processing order, but provide a reference between the various text boxes and the item descriptions.

---

For all figures, the JES and MVS procedures are shown in white, while the XPAF procedures and definitions are shaded. For instructions on setting up your Xerox printers, refer to the relevant printer chapter later in Section Two.

Figure 5-1. XPAF customization for centralized printers

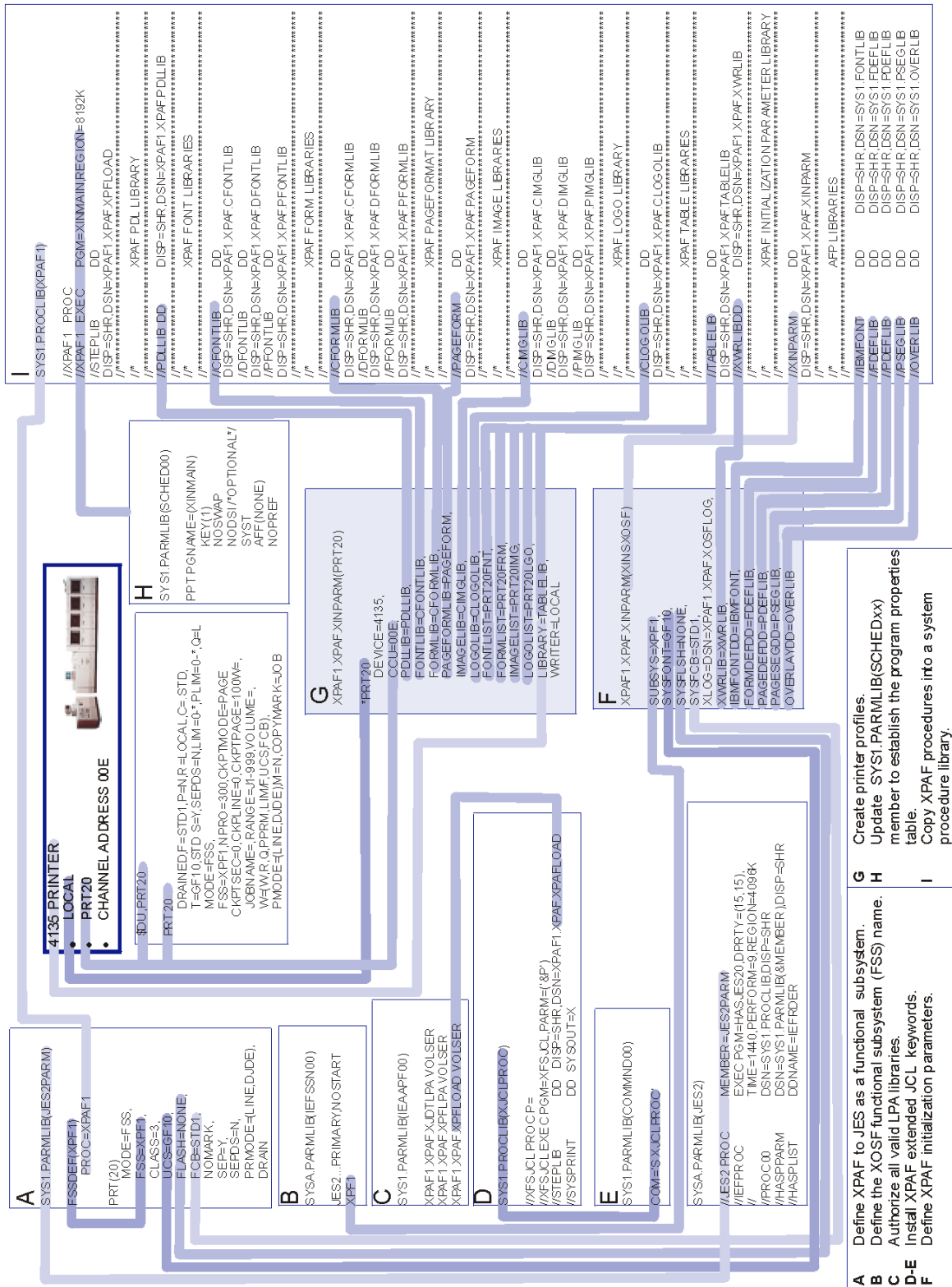


Figure 5-2. XPAF customization for decentralized printers

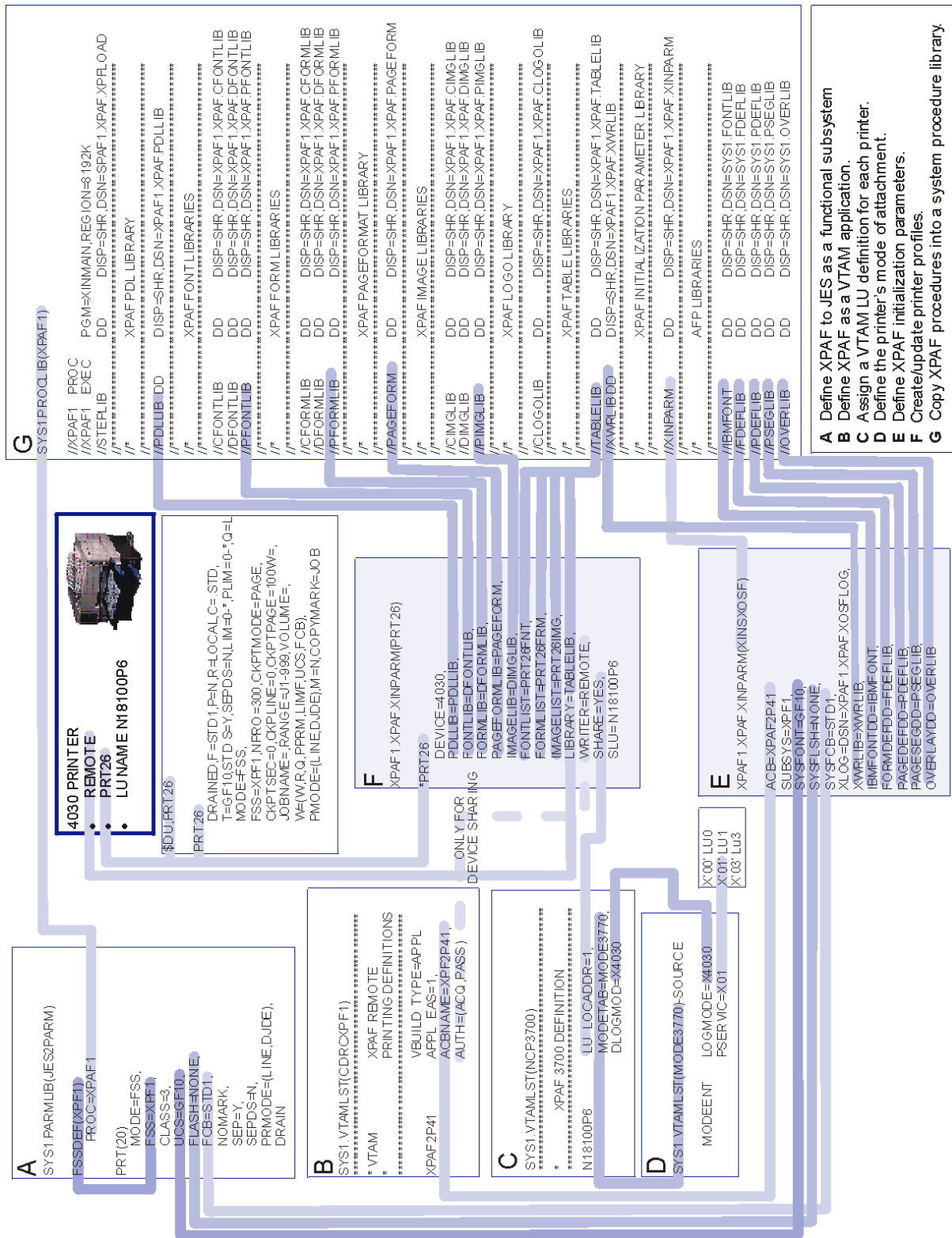
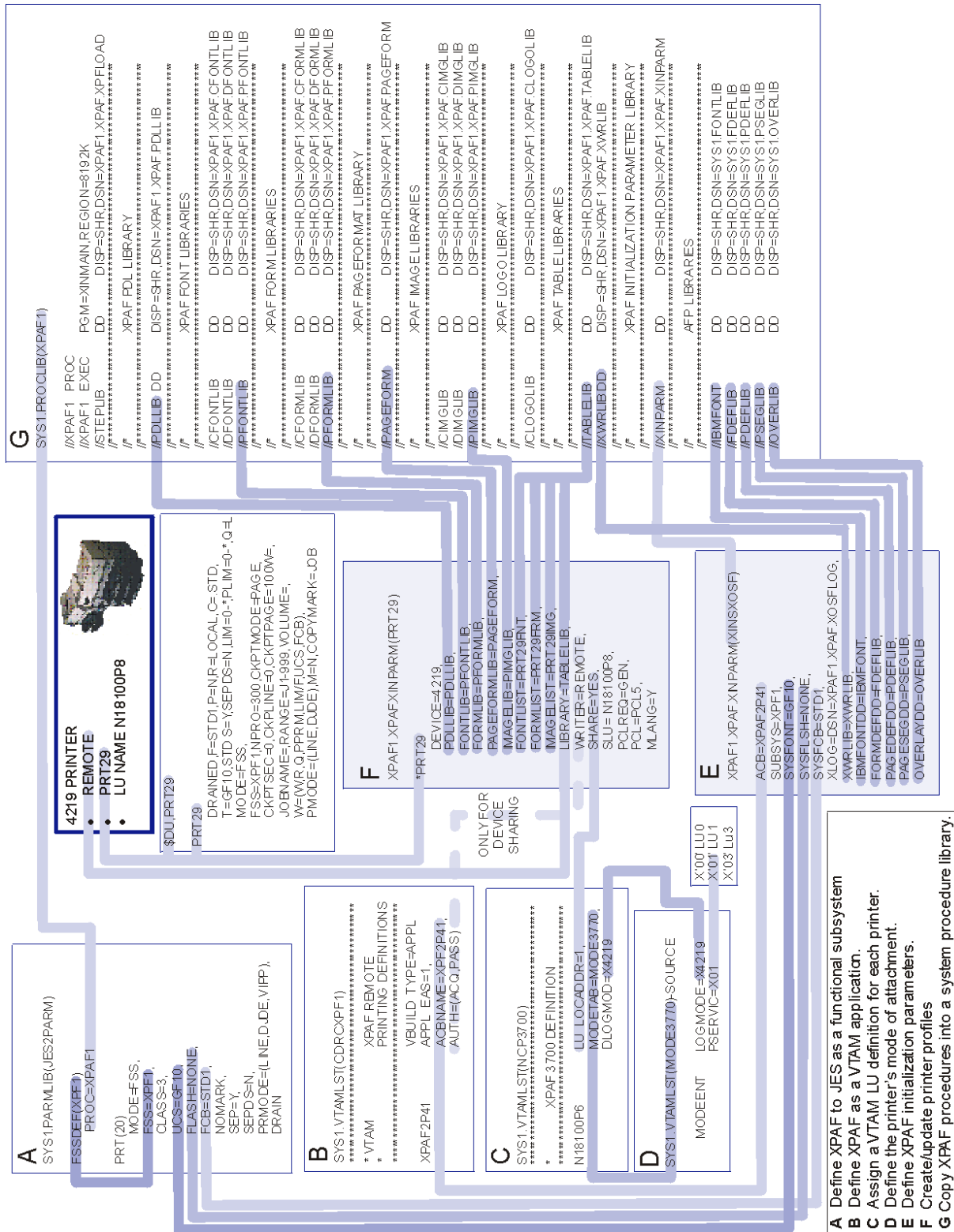


Figure 5-3. XPAF customization for PCL-capable printers



## Procedures

---

After you have completed all previous installation steps, you must customize your system to run with XPAF. Before you begin to print documents, perform the steps shown for the standard customization procedure. If you are running other software packages with XPAF, you also may need to perform the optional customization procedures.

### Standard customization procedure

---

To customize your system for use with XPAF, complete these tasks in the order listed:

1. Prepare the operating system.
  - a. Define local printers to MVS.
  - b. Modify SYS1.PARMLIB members.
  - c. Update system procedure library.
  - d. Update TSO logon procedure.
  - e. Perform an IPL.
  - f. Set VTAM definitions.
2. Perform system tuning.
  - a. Define MVS performance groups and dispatching priorities.
  - b. Move module(s) to the LPA.
3. Install XPAF extended JCL.
4. Define XPAF to JES as an FSS and associate it with Xerox printers.
5. Edit initialization parameters (optional).
6. Code the XPAF user exits (optional, described in chapter 7, "[Coding the XPAF user exits](#)").
7. Edit distributed PDL files (optional).
8. Create/Modify paper-related tables.
9. Set up printers.
10. Create printer profiles.
11. Install multiple copies of XOSF (optional).
12. Verify the installation (described in Chapter 16, "[Performing an installation verification procedure](#)").

## Optional customization procedures

---

In addition to the standard customization options, you also may perform these options:

- Enable TCP batch printing. To support the various third-party TCP stacks, XPAF uses a batch implementation that allows you to customize TCP support for your site.
- Enable Xerox Job Control Facility (XJCF) simulation processing. This facility uses your XPAF system to simulate XJCF processing.
- Set up the Xerox Direct Print Services (XDS) subsystem. XDS allows you to invoke XOSF directly without accessing the JES spool or any other spooling subsystem.
- Set up XPAF for use with the High Performance Image Processing (HPIP) software. This product allows you to print image-intensive data streams at better than rated speed.

Instructions for setting up TCP batch printing, XJCF, and XDS are described in chapter 10, "[Using XPAF extended features](#)." Instructions for setting up XPAF to run with HPIP are described in chapter 12, "[Setting up centralized printers](#)."

## Preparing the operating system

---

This section addresses the operating system setup of PARMLIB members, procedures, JES parameters, security, and VTAM.

### Checklist for preparing the operating system

---

When preparing your operating system, perform these steps in the order that they are listed. As you complete each step, enter the completion date in the checklist table to track and record your progress. The steps for each procedure are explained later in this chapter.

Step	Action	Date completed
1	Define local printers to MVS	
2	Modify SYS1.PARMLIB members	
	A Update SCHEDxx in SYS1.PARMLIB	
	B Update IEFSSNxx in SYS1.PARMLIB	
	C Authorize the XPFLoad library	
	D Update IEASYS in SYS1.PARMLIB	
3	Update the system procedure library	
4	Update the TSO logon procedure	
5	Perform an IPL	
6	Set VTAM definitions	
	A Define XPAF as a VTAM application	
	B Define the VTAM LU definition for remotely-attached printers	

## Step 1 – Define local printers to MVS

---

Use the MVS I/O configuration program to define each local Xerox printer to MVS as a 3211-type device. The 3211 device emulates a connection protocol used to connect to printers.

## Step 2 – Modify SYS1.PARMLIB members

---

The following sections provide instructions for updating various members of the SYS1.PARMLIB library. Perform each step in the order listed.

### Step 2A – Update SCHEDxx in SYS1.PARMLIB

---

Copy this XPAF FSS PPT entry from the SCHEDxx member in stage 2 to the end of your existing SCHEDxx member in SYS1.PARMLIB:

```

/*****
/*      XPAF SUBSYSTEM (LOCAL)      */
/*****
PPT    PGMNAME(XI NMAI N)
KEY(1)
NOSWAP
SYST
NODSI      /* OPTIONAL */
NOPREF
AFF(NONE)

```



**NOTE:** NODSI is an optional parameter that provides the maximum amount of flexibility for updating resources of active FSSs from a batch environment. If you experience problems with DFHSM and NODSI specified, then change NODSI to DSI (which is the MVS system default).

When you add this entry to the SCHEDxx, the MVS PPT is updated with an entry for the program XINMAIN so that the XPAF FSS can communicate properly with JES.

Also, you must specify the SCHEDxx member in your start-up IEASYSnn member. Check for the SCH=xx parameter in IEASYSnn. Ensure the SCH=xx value matches the suffix for the SCHEDxx member you plan to use. If the SCH=xx parameter is not listed, add it to IEASYSnn.

For more information about the MVS PPT, refer to IBM's *System Programming Library: Initialization and Tuning Reference*.

## Step 2B – Update IEFSSNxx in SYS1.PARMLIB

---

Update the IEFSSNxx member in SYS1.PARMLIB to define the subsystem name of the XOSF FSS.

The SUBSYS initialization parameter, found in the XINSXOSF member of XINPARM, names the FSS. The default value for the parameter is XOSF. If you want to change this parameter's value, refer to the SUBSYS parameter in [Section Five: XPAF Parameter and Keyword Reference](#) for more information. Make sure the SUBSYS value matches the FSS name in IEFSSNxx.

In a JES3 environment, the XPAF subsystem name you specify in SYS1.PARMLIB(IEFSSNxx) must not be the same as the procedure name on the JES FSSDEF parameter. If those names match, the started task is initialized with the master scheduler subsystem rather than the JES3 subsystem, as it should be. As a result, XPAF will issue a message indicating that the named subsystem is not supported.

## Step 2C – Authorize the XPFLDLOAD library

---

Authorize the XPFLDLOAD library for execution.



**NOTE:** To authorize other libraries at this time, such as the LPALIB, you may add the library name(s) to the IEAAPFxx member while performing any of these options.

---

If you specified the HLQMST parameter in the #GENPROD macro, first verify that the XPFLDLOAD library is cataloged in the Master Catalog. Next, set up your system to run XOSF from a STEPLIB, a LNKST library, or an LPALST library. Each of these options is described here.

### Option 1: Running XOSF from a STEPLIB

---

You can use the installation-generated XPFLDLOAD as a STEPLIB, or you can create your own STEPLIB:

- If you use the installation-generated XPFLDLOAD as a STEPLIB, add the XPFLDLOAD library name and VOLSER to the IEAAPFxx member in SYS1.PARMLIB. If you are running MVS/ESA version 4.3.0 or higher or any version of OS/390, you optionally may be using the PROGxx member.
- If you create your own STEPLIB:
  1. Allocate a dataset large enough to contain all the modules in XPFLDLOAD.
  2. Copy all the modules from XPFLDLOAD to the new dataset.
  3. Add the new dataset name to the IEAAPFxx member in SYS1.PARMLIB to authorize the library. If you are running MVS/ESA version 4.3.0 or higher or any version of OS/390, you optionally may use the PROGxx member.
  4. Change the dataset name in the STEPLIB statement in the XOSF00, XOAFBAT, and XJCLPROC sample procedures in the stage 2 library to the new dataset name.

### Option 2: Running XOSF from a LNKLIST library

---

You can use a new LNKLIST library or an existing LNKLIST library.

- If you use a new LNKLIST library:
  1. Allocate a dataset large enough to contain all the modules in XPFLD. Make sure the dataset has a high-level qualifier that is cataloged in the Master Catalog.
  2. Copy all modules from XPFLD to the new dataset.
  3. Add the new dataset name to the LNKLISTxx member in SYS1.PARMLIB.
  4. Perform either of these options:
    - Set the APF, LNK, and LNKAUTH=LNKLIST parameters of IEASYSxx in SYS1.PARMLIB.
    - Add the new dataset name to the IEAAPFxx member in SYS1.PARMLIB to authorize the library. If you are at MVS/ESA version 4.3.0 or higher or any version of OS/390, you optionally may be using the PROGxx member.
  5. Remove the STEPLIB from the XOSF00, XOAFBAT, and XJCLPROC sample procedures in the stage 2 JCL library.
- If you use an existing LNKLIST library:
  1. Copy all modules from XPFLD to an existing LNKLIST library.
  2. Verify that the dataset name is in the IEAAPFxx member or that you have specified LNKAUTH=LNKLIST in IEASYSxx.
  3. Remove the STEPLIB from the XOSF00, XOAFBAT, and XJCLPROC sample procedures in the stage 2 library.

### Option 3: Running XOSF from an LPALST library

---

You can use a new LPALST library or an existing LPALST library.

- If you use a new LPALST library:
  1. Allocate a dataset large enough to contain all the modules in XPFLOAD. Make sure the dataset has a high-level qualifier that is cataloged in the Master Catalog.
  2. Add the new dataset name to the LPALSTxx member in SYS1.PARMLIB.
  3. Add the new dataset name to the IEAAPFxx member in SYS1.PARMLIB to authorize the library. If you are at MVS/ESA version 4.3.0 or higher or any version of OS/390, you optionally may be using the PROGxx member.
- If you use an existing LPALST library:
  1. Move all LPA-eligible modules from XPFLOAD to the new dataset. For a list of the LPA-eligible modules, refer to [“Moving modules to the LPA”](#) later in this chapter.
  2. Verify that the dataset name is in the IEAAPFxx member or that you have specified LNKAUTH=LNKLIST in IEASYSxx.

## Step 2D – Update IEASYSxx in SYS1.PARMLIB

---

Review the parameters MAXUSER, RSVSTRT, and RSVNONR in SYS1.PARMLIB member IEASYSxx. Then perform these functions:

- Make sure RSVSTRT is set at a level sufficient to support your site's required number of XOSF started tasks to be run concurrently with all other started tasks.
- Make sure RSVNONR is set at a level sufficient to support your site's required number of XOSF started tasks to be run concurrently with all running address spaces that use MVS cross-memory services.
- If you are running MVS versions 4.3.0 or higher or any version of OS/390, the IEF352I Address Space Unavailable message is issued for informational purposes every time XPAF is terminated. This message indicates normal operation.

If one or more of the following situations occurs:

- No new started tasks can be started
- No new batch initiators can be started
- No additional users can use their TSO logons

you must IPL the system to clear the unavailable address space vector table. To circumvent this problem, determine the maximum number of XPAF starts and stops between IPLs and define at least twice that number of address spaces in the RSVNONR parameter. For example, if you start and stop XPAF a maximum of 40 times between IPLs, you should define at least 40 additional address spaces, for a total of 80.

For complete information about setting appropriate levels for these parameters, refer to the applicable IBM publication:

- *MVS System Programming Library: Initialization and Tuning Reference*
- *MVS Conversion Notebook*

## Step 3 – Update the system procedure library

---

Copy the XOSF00 and XOAFBAT procedures from the stage 2 library into a system procedure library accessible by JES at start-up. The XOSF00 procedure is known as the XOSF start-up proc. Review these actions and perform any that are necessary for your site:

- If IBM's PSF product is not installed, remove the DD statements that reference PSF dataset names from the XOSF00 procedure. These dataset names are identified in the sample XOSF00 member in stage 2.
- If IBM's PSF product is installed, edit XOSF00 in the PROCLIB, and make sure that all the IBM resources (FONTLIB, PSEGLIB, FDEFLIB, and so on) used in your AFP jobs are in the resource DD name concatenation.
- If a system security package such as RACF is installed, it may be necessary to contact your security administrator to authorize the procedure name for execution.



---

**NOTE:** Depending on how your security system handles VSAM control interval processing, the XOSF started task may require control access to LDM files.

---

- In a JES3 environment, the XPAF subsystem name you specify in SYS1.PARMLIB(IEFSSNxx) must not be the same as the procedure name on the JES FSSDEF parameter. If those names match, the started task is initialized with the master scheduler subsystem rather than the JES3 subsystem, as it should be. As a result, XPAF will issue a message indicating that the named subsystem is not supported.
- Specify 0M for the region size of your procedure library to maximize the virtual storage available, especially when running more than one printer per XOSF task.

## Step 4 – Update the TSO logon procedure

---

In the SAMPTSO stage 2 library member, update the TSO logon procedure with the DD statements. These DD statements instruct the system to set up the XOAF environment, which includes providing access to the initialization parameters and TABLELIB.

Update your ISPF primary panel with an option to invoke XOAF using either of these options:

- By PGM(XOASPF00) NEWPOOL. Use the XRX@PRIM member in XPFSAMP as a sample. You may need to increase the size of the DYNAMNBR parameter of the logon procedure. It must be large enough to accommodate the number of datasets that XOAF allocates. The size of this parameter is site dependent.
- By PGM(XOASPF00) PARM(USERSVC=nnn) NEWPOOL, to install the XOAF user SVC, which is required for XOAF support of UCBs above the 16M line. To use the default SVC supplied with XPAF, specify 201 for nnn. To use another number, rename the SVC module IGC0020A according to standard IBM SVC naming conventions. Use the XSVCUPDT member in XPFSAMP as a sample (refer to figure 5-4) and make the necessary modifications. You will need to ensure that all of the PDSs in your ISPLLIB concatenation are defined to MVS as APF authorized.

Do not use the TSO logon procedure until after you have installed the XPAF resources.



**NOTE:** When you customize your system after initially installing XPAF or after applying a maintenance tape, you may convert CLIST files in the XPFCLIB dataset from FB to VB format. After copying any CLIST members you must edit and remove line numbers if they are present.

---



**NOTE:** Xerox provides CLIST files in the XPAF Custom Library, these CLIST files can be accessed and loaded from the XOAF Systems Services Menu. For information on using the XOAF Systems Services Menu refer to [Section Three: Managing Resources with XPAF](#).

---

Figure 5-4. Sample XSVCUPDT member

```

//job-name JOB job-information
//*
//* *****
//* *
//* * SVC TABLE UPDATE UTILITY: *
//* *
//* * THIS SAMPLE JCL IS PROVIDED AS AN EXAMPLE OF HOW *
//* * TO USE THE XSVCUPDT UTILITY TO ADD/REPLACE OR *
//* * DELETE AN ENTRY IN THE SYSTEM SVC TABLE, WITHOUT *
//* * HAVING TO IPL THE SYSTEM. THE DEFAULT SVC NUMBER *
//* * IS 201. IF ANOTHER NUMBER WILL BE USED, THE PARM *
//* * BELOW MUST BE CHANGED TO REFLECT THE NEW NUMBER. *
//* *
//* * TO ADD/REPLACE THE SVC TABLE ENTRY, SPECIFY: *
//* * PARM=' nnn, REPLACE' WHERE nnn IS THE SVC NUMBER *
//* *
//* * TO DELETE THE SVC TABLE ENTRY, SPECIFY: *
//* * PARM=' nnn, DELETE' WHERE nnn IS THE SVC NUMBER *
//* *
//* * NOTE: , REPLACE AND , DELETE ARE OPTIONAL AND *
//* * DEFAULT TO , REPLACE *
//* *
//* * IF THE SVC NUMBER IS CHANGED, THE SVC ROUTINE *
//* * MUST BE RENAMED ACCORDING TO STANDARD SVC NAMING *
//* * CONVENTIONS. FOR EXAMPLE, THE SVC NAME FOR SVC 201 *
//* * IS IGC0020A, WHERE IGC00 IS STANDARD, AND 20A *
//* * REPRESENTS THE SIGNED SVC NUMBER IN EBCDIC, *
//* * AS FOLLOWS: X' F2F0C1' *
//* *
//* * NOTE: THE SVC ROUTINE MUST ALREADY EXIST IN *
//* * EITHER MLPA, PLPA, OR FLPA PRIOR TO USING THE *
//* * REPLACE OPTION. *
//* *
//* * THE IEASVC00 PARAMETER STATEMENT THAT CORRESPONDS *
//* * TO THIS SVC IS AS FOLLOWS: *
//* *
//* * SVC Parm 201, REPLACE, TYPE(3), EPNAME(IGC0020A), *
//* * LOCKS(LOCAL) *
//* * *****
//*
//XSVCUPDT EXEC PGM=XSVCUPDT,
// PARM=' 201, REPLACE' <---SVC NUMBER

//* AND OPTION
//*
//* PARM=' 201, DELETE' <---SVC NUMBER
//* AND OPTION
//*
//STEPLIB DD DSN=USER.prefix.XPFLOAD,DISP=SHR <---XPAF LOAD LIB
//*
//SYSUDUMP DD SYSOUT=*

```

## Step 5 – Perform an IPL

---

Perform an IPL with CLPA to complete XPAF installation. You can perform this IPL now or at any time before you finish customizing your system. An IPL will:

- Add required modules to the LPA.
- Authorize required libraries.
- Update the PPT.
- Update the Subsystem Name Table.
- Define printers to MVS.
- Invoke updated JES parameters.
- Make extended JCL support available, if requested.

## Step 6 – Set VTAM definitions

---

If you do not need to define any remote printers, you may skip this section. Consult with your VTAM administrator before performing these steps to verify that the necessary VTAM definitions have been added.

### Step 6A – Define XPAF as a VTAM application

---

XPAF uses VTAM services to communicate to remote printers. Therefore, it must be defined as a VTAM application. Each XPAF started task requires a separate VTAM application definition. Use this sample application definition statement as a skeleton:

```
appldef APPL AUTH=(ACQ)
```

For more information on running multiple copies of XOSF, refer to [“Installing multiple copies of XOSF”](#) later in this chapter.

The *appldef* value assigned to the name of the application definition statement is the value you should use for the ACB initialization parameter in XINPARM.

XPAF does not need mode tables or USS tables, so you can omit these APPL definition parameters. Since the VTAM writer must have authority to acquire printers, the AUTH=(ACQ) parameter is required.

### Step 6B – Define the VTAM LU definition for remotely-attached printers

---

Each remotely-attached printer must have a corresponding VTAM LU definition. The definition varies according to the printer's mode of attachment. You must know the mode of attachment to make the correct VTAM LU definition name.

The name specified for the VTAM LU is also specified for the SLU in the printer profile. Refer to [“Setting up printer profiles”](#) later in this chapter for more information about printer profile parameters.

## Tuning your system

---

This section provides suggestions for tuning the performance of your XPAF system.

### Defining MVS performance groups and dispatching priorities

---

For more efficient XPAF performance, you may want to define one or more separate MVS performance groups for XOSF. XOSF should run at a lower dispatching priority than response- intensive online systems such as IMS, CICS, and TSO but at a higher dispatching priority than batch.

The general guidelines for setting up performance groups and dispatching priorities are:

- XPAF should have the same type of performance group as the subsystem with which it communicates.
- XPAF should have a dispatching priority that is equal to or slightly lower than the subsystem with which it communicates.

If you run multiple FSSs on the same system, mean-time-to-wait dispatching may yield better overall performance than fixed dispatching.

For more information about defining MVS performance groups, refer to the IBM publication *MVS System Programming Library: Initialization and Tuning Reference*.

### Moving modules to the LPA

---

As a performance enhancement, if you run multiple FSSs, use a single copy of XOSF in the LPA. This will reduce the working set size of each XOSF.



---

**NOTE:** You cannot run different versions of XOSF from the LPA. To override the LPA concatenation, you must use a STEPLIB statement in the XOSF start-up proc to point to a different version of XOSF.

---

*Eligible modules*

You may move any or all of the following modules to the LPA to improve the performance of your system:

HDCAREQ	XDIFSSOR	XEIEEXIT	XPSCMSGP
HDCARSP	XDIFSTAE	XEIENQ	XRCIMAGE
HDCCODES	XDIGETRQ	XEiestae	XRCIRAW
HDCDREQ	XDIHASP	XEIFSNAP	XRCOVLAY
HDCDRSP	XDINOTE	XEIGETMN	XRCPSEG
LDMDIRBL	XDIOPER	XEIINPUT	XRDIMG
LDMMAIN	XDIPARSE	XEILoad	XRDOVLAY
MSFDAIR	XDIPINIT	XEIMAIN	XRDPSEG
MSFMAIN	XDIPRINT	XEIOPEN	XRFAEG
MSFPRNT	XDIPTERM	XEIOPER	XRFBUFMG
MSFTBLD	XDIPUTRQ	XEIOTPUT	XRFFDEF
PAL#XPAF	XDIRDATA	XEIPFIX	XRFFREE
THMEXEC	XDIRELRQ	XEIPFREE	XRFIMGDC
UFTIFLEW	XDIRFTSK	XEIPUTMN	XRFPDEF
UFTIFLIW	XDIRSTAT	XEIRSV	XSLBLOCK
XAMFRM	XDIRTIAS	XEIRTM	XSLEXCP
XAMMAIN	XDISBTSK	XEISLOG	XSLMAIN
XAUMAIN	XDISDATA	XEISMFLG	XSLNERT
XBPAM	XDISJF	XEISNAP	XSLSEPR
XCCMAIN	XDISMS	XEITIME	XTBINIT
XCDMAIN	XDISSI	XEITRACE	XTF\$HOOK
XCNMAIN	XDITIMER	XEIXLOG	XTFCMDP
XDIAUTO	XDITRMTK	XINKEYS	XTFEVENT
XDICKPNT	XDIVALN	XJCMAIN	XTWMAIN
XDICMPC1	XDIWAKE	XJSLPARS	XUCMAIN
XDICMPC2	XEIALLOC	XJSLPROC	XVWEXITS
XDIESTAE	XEIATCH	XLWTMAIN	XVWMAIN
XDIFSACK	XEICLOSE	XOSFXPAF	XVWRMT
XDIFSAOR	XEIDALLC	XPCLMAIN	XWRMAIN
XDIFSICD	XEIDEQ	XPCLRESC	XWRMAINX
XDIFSIRQ	XEIDIR	XPLMAIN	XXQMAIN
XDIFSS	XEIDTCH	XPSCMAIN	

## Procedure

---

For an explanation of how to run XOSF from an LPALST library, refer to [“Preparing the operating system”](#) earlier in this chapter.

## Performance considerations for XDS

---

The XOSF FSS that will be used by an XDS subsystem must be defined in the performance group used for batch processing.

## Performance optimization

---

XDS sends data as a block of records. Therefore, when you code the JCL for XDS print jobs, you should specify as large a block as possible for the input source to increase performance by XDS and XPAF.

Example:

```
//SYSUT1 DD DISP=SHR, DSN=input. source,  
          DCB=(BLKSI ZE=32760, LRECL=84, RECFM=FBM)
```

This example allows 390 records of 84 bytes to be transferred to XOSF in one I/O session. This method provides optimum performance.

## Installing XPAF extended JCL

XPAF extended JCL does not modify MVS or JES and does not affect any IBM modules or JCL. However, after you install XPAF, the Xerox JDT will reside in the LPA. If you have an LPA size constraint, you may not want to use XPAF extended JCL.



**CAUTION:** Any products that use their own JCL extensions and do not require extended JCL functions, such as output distribution packages, may not recognize XPAF extended JCL commands (Xerox-specific JDTs). Using XPAF on the same system as these products may cause unexpected print results.

If you want to install XPAF extended JCL keywords or apply maintenance to them without performing an IPL, refer to “[Using XPAF extended JCL installation options](#)” later in this chapter.

For information about using a particular XPAF extended JCL keyword, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

## Using XPAF extended JCL installation options

You can install XPAF extended JCL keywords and apply maintenance to them without performing an IPL. To do so, use these options, which are specified on the PARM parameter of the EXEC statement in the extended JCL proc:

- INSTALL
- LOAD
- REDO
- REMOVE
- DELETE

These options are mutually exclusive. That is, you can specify only one option at a time on the proc. Do not include these options in the COMMNDxx member in SYS1.PARMLIB.

## Sample extended JCL proc

The XJCLPROC member in the STAGE2 dataset contains sample JCL for a procedure to activate the XPAF extended JCL.

Figure 5-5. Sample XJCLPROC member

```
//XFSJCL   PROC P=
//XFSJCL   EXEC PGM=XFSJCL, PARM=(' &P' )
//STEPL1 B DD   DI SP=SHR, DSN=prefi x. XPFLoad
//XJDTLPA DD   DI SP=SHR, DSN=prefi x. XPFLPA
//SYSPRINT DD   SYSOUT=*
```

## Available options

---



**NOTE:** Ensure that all datasets specified for the XJDTLPA and STEPLIB DD statements are APF authorized.

---

To perform any of the installation options, issue the MVS start command at the master console. If you renamed the extended JCL proc in your PROCLIB, substitute that name in place of XJCLPROC when you issue the command.

### INSTALL

---

Use this option to install XPAF extended JCL for the first time. If no option is specified on the proc, this option is the default.

At the master console, enter:

**S XJCLPROC,P=INSTALL**

### LOAD

---

Use this option to load the JDT module into the MLPA from the dataset specified in the XJDTLPA DD statement in the extended JCL proc.

ALL loads all of the JDT modules that are associated with XPAF. The XPAF extended JCL keywords are included in the XESJDT00 module.

At the master console, enter:

**S XJCLPROC,P='LOAD=ALL'**

Enclose the parameter value in single quotes.

### REDO

---

If you have applied maintenance to XESJDT00, use this option to reinstall the XPAF extended JCL keywords and make new or revised keywords available for use.

Before you use this option, you must load the updated JDT module into the LPA or MLPA by performing an IPL or using the LOAD option. Otherwise, the original JDT module will remain in effect.

Each time you use this option between IPLs, the extended CSA is enlarged by approximately 20K.

At the master console, enter:

**S XJCLPROC,P=REDO**

## REMOVE

---

This option removes the XPAF extended JCL keywords from your system. Once the XPAF extended JCL keywords have been removed, they can be installed again using the INSTALL option.



**CAUTION:** If users submit jobs using the XPAF extended JCL keywords at the time you perform a REMOVE, they will receive JCL errors. Therefore, you should schedule this activity for a time when jobs using XPAF extended JCL are not run.

---

Each time you use this option between IPLs, the extended CSA is enlarged by approximately 20K.

At the master console, enter:

**S XJCLPROC,P=REMOVE**

## DELETE

---

Use this option to delete XESJDT00 from the MLPA. The JDT module must have been loaded previously using the LOAD option. This option does not physically delete a module from the disk load library.



**CAUTION:** Do not use this option to delete XESJDT00 from the MLPA if you previously specified the INSTALL or REDO option to activate the XPAF extended JCL. If you do, jobs will fail with a JCL error, and you must IPL your system or specify the REMOVE option to remove the XPAF extended JCL without an IPL.

---

ALL deletes all of the JDT modules that are associated with XPAF. The XPAF extended JCL keywords are included in the XESJDT00 module.

At the master console, enter:

**S XJCLPROC,P='DELETE=ALL'**

Enclose the parameter value in single quotes.

## Installing XPAF extended JCL for the first time

---

To install XPAF extended JCL, follow these steps:

- Step 1.** Copy the sample procedure XJCLPROC from the stage 2 library to a system PROCLIB. You can use either the name XJCLPROC or your own procedure name.
- If a security package is installed, contact the security administrator to authorize the procedure name for execution if necessary.
- Step 2.** At the master console, enter **S XJCLPROC,P='LOAD=ALL'** to load the XPAF JDT module, XESJDT00, into the MLPA.
- Step 3.** At the master console, enter **S XJCLPROC,P=INSTALL** to install all of the extended JCL keywords.
- To install the extended JCL keywords permanently, you must also complete steps 4 and 5. Otherwise, you will have to perform steps 2 and 3 each time an IPL is performed.
- Step 4.** Add the command **COM='S XJCLPROC'** to the **COMMNDxx** member in **SYS1.PARMLIB** to ensure the procedure is executed each time an IPL is performed.
- Step 5.** Load the XESJDT00 module from XPFLPA to the system LPA using one of these procedures:
- If you specified the HLQLPA or HLQMST parameter in the #GENPROD macro:
    - Verify that the XPFLPA library is cataloged in the Master Catalog.
    - Authorize the XPFLPA library by adding the XPFLPA library name and VOLSER to IEAAPFxx in SYS1.PARMLIB or PROG00.
    - Add the XPFLPA library name to the LPALSTxx member in SYS1.PARMLIB.
  - If you did not specify the HLQLPA or HLQMST parameters in the #GENPROD macro and you need to create a new library:
    - Create a new library large enough to hold the module in XPFLPA. Make sure the library is cataloged in the Master Catalog.
    - Copy the module from the XPFLPA library into the new library.
    - Authorize the library by adding the new library name to IEAAPFxx in SYS1.PARMLIB.
    - Add the new library name to the LPALSTxx member in SYS1.PARMLIB.
  - Load the module dynamically into the LPA using either the **S XJCLPROC,P='LOAD=ALL'** command or a software product such as Resolve or Omegamon.




---

**NOTE:** If you chose this option and want the changes to remain permanent, you must still perform either of the first two options. Otherwise, when you IPL your system, the changes you made will be lost.

---

## *Applying maintenance to the XPAF extended JCL*

---

After you apply maintenance that affects XESJDT00, follow these steps to make the new or revised XPAF extended JCL keywords available:

- Step 1.** At the master console, enter **S XJCLPROC,P='LOAD=ALL'** to load the revised XESJDT00 module into the MLPA.
- Step 2.** At the master console, enter **S XJCLPROC,P=REDO** to reinstall all of the XPAF extended JCL keywords.

## *Removing XPAF extended JCL*

---

If, after installing the XPAF extended JCL or applying maintenance to it, you decide that you want to remove it, follow these steps:

- Step 1.** At the master console, enter **S XJCLPROC,P=REMOVE** to remove all of the XPAF extended JCL keywords from your system.
- Step 2.** At the master console, enter **S XJCLPROC, P='DELETE=ALL'** to delete XESJDT00 from the MLPA.  
  
If you applied maintenance and want to return to your previous maintenance level, perform this additional step:
- Step 3.** At the master console, enter **S XJCLPROC,P=REDO** to reinstall all of the original XPAF extended JCL keywords.

## Defining XPAF to JES

---

To enable XPAF to send documents to the printer, it must be defined to JES as a functional subsystem (FSS) and associated with Xerox printers. This section introduces you to the JES2 and JES3 initialization statements for the functional subsystem and printer. For a complete description of the statements, including default values, refer to the appropriate MVS JES2 or JES3 initialization and tuning manual.

The dataset referenced by the //HASPPARM DD in the JES2 start-up proc or //JES3IN DD in the JES3 start-up proc contains the necessary statements for defining XPAF to JES. For a detailed description of the parameters, refer to the SAMPJES member in the STAGE2 library for a sample of the FSS and PRT definition to JES.

## Setting up definitions for non-JES subsystems

---

You must define XOSF to the spooling subsystem as a functional subsystem and associate it with Xerox printers.

If you are a CMA-SPOOL or CA-SPOOL user, use the dataset referenced by the ESFPARM DD statement in the CMA-SPOOL or CA-SPOOL startup proc. For a description of the non-JES initialization statements for the FSS and printer, refer to the corresponding documentation for CMA-SPOOL or CA-SPOOL.

If you are an XDS user, the printer to be used for an XDS batch print job is specified in the JCL for the job. Refer to chapter 10, ["Using XPAF extended features"](#) for a description of the JCL requirements for XDS.

## FSS definitions

---

This section contains sample JES2 and JES3 functional subsystem definitions, along with a description of the parameters contained within those definitions. Use these examples to code your own FSS definitions.

Commas, single quotes, equal signs, and parentheses are part of a definition's syntax. When present, you must include them exactly as indicated.

If a security package such as RACF is installed, you must add XPAF started task names to the started-task table (ICHRIN03).

## JES2

---

For Version 4.2.0:

$$\text{FSSDEF}(fss\text{-}name) \text{ PROC}=\text{proc}\text{-}name, \text{HASPFSM}=\text{HASPFSM} \left[ , \text{AUTOSTOP}=\left\{ \begin{array}{c} \text{Y} \\ \text{N} \end{array} \right\} \right]$$

For Version 4.3.0 and higher:

$$\text{FSS}(fss\text{-}name) \text{ PROC}=\text{proc}\text{-}name, \text{HASPFSM}=\text{HASPFSM} \left[ , \text{AUTOSTOP}=\left\{ \begin{array}{c} \text{Y} \\ \text{N} \end{array} \right\} \right]$$

$\left\{ \begin{array}{c} \text{FSSDEF} \\ \text{FSS} \end{array} \right\}$	Specifies the name of the XOSF FSS. You must refer to the same functional subsystem name in all PRTnnnn initialization statements for the FSS.
PROC	Specifies the name of a procedure for starting the XOSF FSS procedure. The installation library contains a sample of this procedure named XOSF00, which is modified during customization. You can refer to the same start-up procedure in different FSSDEF initialization statements. If you do not include this parameter, PROC defaults to the name specified in the FSSNAME parameter.  If the XPAF subsystem name specified in SYS1.PARMLIB(IEFSSNxx) is the same as the procedure name specified on the JES parameter FSSDEF, the started task is initialized with the master scheduler subsystem rather than the JES2 or JES3 subsystem. As a result, XPAF issues a message indicating that the named subsystem is not supported.
HASPFSM	Specifies the name of the load module that is loaded into the FSS address space. You must code this parameter exactly as shown to specify the default.
AUTOSTOP	Specifies whether or not the address space is stopped automatically when the last active printer is drained.

## JES3

---

For all versions:

`FSSDEF,TYPE=WTR,FSSNAME=fssname,PNAME=procname`

TYPE	Defines the printer to JES3 as an FSS writer. You must code this parameter exactly as shown to define the printer as a writer.
FSSNAME	Specifies the name of the XOSF FSS. You must refer to the same functional subsystem name in all device initialization statement for the FSS so it can be recognized by JES.
PNAME	<p>Specifies the name of a procedure for starting the XOSF FSS procedure. The installation library contains a sample of this procedure named XOSF00, which is modified during customization. You can refer to the same start-up procedure in different FSSDEF initialization statements. If you do not include this parameter, PNAME defaults to the name specified in the FSSNAME parameter.</p> <p>If the XPAF subsystem name specified in SYS1.PARMLIB(IEFSSNxx) is the same as the procedure name specified on the JES3 FSSDEF statement, the started task is initialized by the master scheduler subsystem rather than the JES2 or JES3 subsystem. As a result, XPAF issues a message indicating that the named subsystem is not supported.</p>

## Printer definitions

---

This section contains sample JES2 and JES3 printer definitions and a description of the parameters contained within the definitions. Use these examples to code your own printer definitions.

### JES2

---

For Version 4.2 and higher

```
PRTnnnn FSS=fss-name,MODE=FSS,NPRO=0,UCS=0[,DRAIN][,CLASS=class]
[ ,PRMODE= { (LINE)
              (DJDE)
              (PAGE)
              (VIPP) } ] [,FLASH=forms-overlay-frame] [ ,SEP= { YES
                                                                NO } ] [ ,SEPDS= { YES
                                                                NO } ]
```

PRTnnnn	Names the printer that will operate under the control of an FSS.
FSS	Specifies the name of the functional subsystem that will manage the printer. This name must be the same as the functional subsystem name defined on an FSSDEF initialization statement.
MODE	Must specify that the printer is managed by a functional subsystem (MODE=FSS).
NPRO	Specifies the length of time the printer will wait for more data before forcing out the already-printed pages. It is specified for channel-attached printers only.
UCS	Specifies the name of the character set mounted on printers that have no UCS image specified. If you specify 0, JES2 bypasses the UCS loading procedure until a job is processed that requires a specific UCS image.
DRAIN	Specifies that the printer will be started by operator command. You can use the START parameter instead of the DRAIN parameter if you want to bypass the operator and use JES to start the printer automatically.
CLASS	Specifies the assigned output class.
PRMODE	Specifies the types of input accepted by this printer.
FLASH	Specifies a forms overlay frame associated with this printer rather than letting JES specify a default. If you use this parameter, be sure to specify the same value in the SYSFLSH initialization parameter. We recommend that you specify FLASH=NONE.
{ SEP NOSEP }	Indicates whether separator pages print between jobs. You must specify SEP or SEP=YES when using either default or custom banner pages.
{ SEPDS NOSEPDS }	Indicates whether separator pages print between datasets. You must specify SEPDS or SEPDS=YES when using either default or custom banner pages.

## JES3

---

For all versions:

```

DEVICE,DTYPE=PRT3820,JUNIT=(,SY1,UR,OFF),JNAME=device-name,FSSNAME=fss-name
[, MODE=FSS][,NPRO=NO][,WS=(criteria)]
      [ ,PM= { (LINE)
               (DJDE)
               (PAGE)
               (VIPP)
             } ] [ ,FLASH=forms-overlay-frame]
      [ ,CARRIAGE=(forms-control-buffer)][,CHARS=(font-name)] ,HEADER= { YES } [ ,BURST= { YES } ]
                               -                                     NO  ]
                               -

```

DTYPE	Defines the printer device type. Code this parameter exactly as shown.																								
JUNIT	Defines printer characteristics to JES. Code this parameter exactly as shown.																								
JNAME	Names the printer that will operate under the control of an FSS.																								
FSSNAME	Specifies the name of the functional subsystem that will manage the printer. This name must be the same as the functional subsystem name defined on an FSSDEF initialization statement.																								
MODE	Must specify that the printer is managed by a functional subsystem (MODE=FSS).																								
NPRO	Specifies the length of time the printer will wait for more data before forcing out the already-printed pages. This value is specified for channel-attached printers only.																								
WS	<p>Specifies the writer selection criteria. The value of the criteria indicates the items JES3 output service checks, in order of importance, when selecting a dataset for output processing on this printer.</p> <p>You must include CL and U as part of your specification, where:</p> <table> <tr> <td>CL</td><td>SYSOUT class</td></tr> <tr> <td>U</td><td>Train image UCS</td></tr> </table> <p>Additional XPAF-acceptable criteria for this printer definition parameter are:</p> <table> <tr> <td>C</td><td>Carriage tape or FCB</td></tr> <tr> <td>CM</td><td>Copy modification</td></tr> <tr> <td>D</td><td>Dataset destination</td></tr> <tr> <td>F</td><td>Forms requested</td></tr> <tr> <td>FL</td><td>Flash</td></tr> <tr> <td>L</td><td>Limit scheduling (line, page, or record)</td></tr> <tr> <td>P</td><td>Dataset priority</td></tr> <tr> <td>PM</td><td>Processing mode</td></tr> <tr> <td>SS</td><td>Stacker</td></tr> <tr> <td>T</td><td>Specific device type requested</td></tr> </table> <p>Note these items when using the WS parameter:</p> <ul style="list-style-type: none"> <li>Do not use the parameters XUNIT or XTYPE for XPAF printers.</li> </ul>	CL	SYSOUT class	U	Train image UCS	C	Carriage tape or FCB	CM	Copy modification	D	Dataset destination	F	Forms requested	FL	Flash	L	Limit scheduling (line, page, or record)	P	Dataset priority	PM	Processing mode	SS	Stacker	T	Specific device type requested
CL	SYSOUT class																								
U	Train image UCS																								
C	Carriage tape or FCB																								
CM	Copy modification																								
D	Dataset destination																								
F	Forms requested																								
FL	Flash																								
L	Limit scheduling (line, page, or record)																								
P	Dataset priority																								
PM	Processing mode																								
SS	Stacker																								
T	Specific device type requested																								

- Vary the XPAF printer UCB offline to each JES3 local and global processor:  
`*V,(ucb),OFFLINE,(sy1,sy2)`
- Vary the XPAF printer UCB online to the processor upon which XPAF is executing:  
`*V,(ucb),ONLINE,sy1`
- Start the output writer (XPAF):  
`*X,WTR,OUT=device-name,NAV=R`
- Vary the XPAF printer online:  
`*V,device-name,ON`
- If your system's operating environment is JES3 Version 4 or higher, you can define a maximum of 16 device statements that reference the same FSSNAME.

PM	Specifies the types of input accepted by this printer.
FLASH	Specifies a forms overlay frame associated with this printer rather than letting JES specify a default. If you use this parameter, be sure to specify the same value in the SYSFLSH initialization parameter. We recommend that you specify FLASH=NO.
CARRIAGE	Specifies the JES default page definition or forms control buffer. If you use this parameter, be sure to specify the same value in the SYSFCB initialization parameter. Refer to the appropriate JES3 initialization and tuning manual for more information about this subparameter.
CHARS	Specifies a default JES3 font. If you use this parameter, be sure to specify the same value in the SYSFONT initialization parameter. Refer to the appropriate JES3 initialization and tuning manual for more information about this subparameter.
HEADER	Indicates that this printer will print header and dataset separator pages for each job and dataset.
BURST	Indicates that this printer will print trailer separator pages for each job and dataset.

## Selecting initialization parameters

---

XPAF is supplied with initialization parameters in the XINSXOAF and XINSXOSF members of XINPARM. These parameters:

- Provide MVS and JES information to XPAF
- Name DD statements in the XOSF start-up and the XOAF logon procedures
- Describe DJDE formats and defaults

To prepare your system for printing with XPAF, review the default initialization parameters distributed in the XINSXOAF and XINSXOSF members of XINPARM. Add or modify any necessary parameters for your site's specifications.

Refer to [Section Five: XPAF Parameter and Keyword Reference](#) for a listing of parameters that apply to XOAF and to XOSF and for a description of each initialization parameter.

## Preparing the printer PDL

PDL consists of two file types:

- JSL files
- Cataloged member files (CMEs and PDEs)

XPAF provides sample PDL members in XPFSAMP, as shown in table 5-1. You can copy and edit any of these members to create your own PDL.

Table 5-1. Sample PDL members in XPFSAMP

Member name	Description
DFAULT	Contains a JSL you can use to print online jobs or output that was written to tape.
GLOBSL	Contains standard PDE members that can be referenced by multiple JSLs or DJDEs.
HIP871	Contains a JSL you can use with a centralized printer that is remotely-attached to the host using the 871 CM.

### PDL native libraries

XPAF provides a native library for storing PDL called PDLLIB, which contains the same JSL and cataloged members as the DFAULT and GLOBSL members in XPFSAMP.

You also can use your own native library by specifying it in the XOSF start-up proc DD statement named by the PDLLIB initialization or printer profile parameter. Each printer can use its own PDL native library, or all printers can share one common PDL native library.

Refer to [Section Five: XPAF Parameter and Keyword Reference](#) for more information about these parameters. Refer to [Section Three: Managing Resources with XPAF](#) for information on defining and initializing native libraries.

### Checklist for preparing the printer PDL

Follow these steps to prepare your printer PDL for use with XPAF. Enter a check in the Completed column as you finish each step to track and record your progress.

Step	Procedure	Completed
1	Update the PDL source	
2	Load the PDL source	
3	Update initialization parameters (optional)	
4	Compile the PDL source	

## Step 1 – Update the PDL source

---

You can update the sample PDL members to include your site-specific values, or you can use your current printer JSL and modify it to include XPAF parameters. If you make a change to one of the sample PDL members, make the corresponding change to the other members.



**CAUTION:** After you edit any online PDL, you must use the Load PDL option in XOAF to load the updated version to the appropriate PDL native library, or your results will be unpredictable.

---

### Option 1: Updating the sample JSL

---

If you plan to use the JSL distributed with XPAF, you should first save the JSL currently residing on your printer. If necessary, make a backup or rename it so that it does not get overwritten when you download the XPAF version of the JSL. You may want to use your current printer JSL to run applications other than XPAF or to operate the printer in different environments.

Compare the sample JSL with the JSL you have been using on your printer. Edit the sample JSL on the host to add any site-specific values you require. The parameters you may want to add from your current JSL include:

- IDEN PREFIX, OFFSET, and SKIP
- RSTACK and RAUX criteria
- Banner page criteria
- Optional JDEs

### Option 2: Updating your current JSL

---

If you want to continue using your own JSL, refer to [Section Three: Managing Resources with XPAF](#) for instructions on uploading your current JSL from the printer to the host for editing.

Compare the sample JSL with the JSL you have been using on your printer. Edit the uploaded JSL on the host to add any XPAF-specific values you require.

If you want to use the banner page supplied with XPAF, add the test for banner page from the DFAULT member. Be sure to include the appropriate TABLEs and CRITERIAs.

If you print page-formatted and/or AFP documents, add the test for RSTACK from the DFAULT member. Be sure to include the appropriate TABLEs and CRITERIAs. You must also add the PGMODE JDE or code your own JDE that includes a VOLUME CODE=NONE statement.

## Step 2 – Load the PDL source

---

For online PDL only, in XOAF use the Load PDL option on the Load Resources menu to load the PDL into the appropriate PDL native library. For instructions on using the Load PDL option in XOAF, refer to [Section Three: Managing Resources with XPAF](#).

## Step 3 – Update initialization parameters (optional)

---

The XINSXOSF member distributed with XPAF in XINPARM contains JSL-related initialization parameters. The default values for these initialization parameters match the values of the equivalent parameters in the distributed JSL:

```
DEFJDE=DFLT
DEFJDL=DFAULT
METAJDE=PGMODE
METAJDL=DFAULT
```



**NOTE:** The DJDE IVP uses the identifier value @@@DJDE. If your system uses a different identifier value, specify IDENnn=@@@DJDE in your XINSXOSF member (as well as the corresponding DJDEOFnn and DJDESKnn initialization parameters).

For more information about these parameters, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

## Step 4 – Compile the PDL source

---

To compile PDL source, use option 1 for the 4235 printer running in XPPM mode. For all other printers, use option 2.

### Option 1: 4235 printer in XPPM mode

---

- Step 1.** Compile your JSL on the host using a host resident JSL compiler such as XJDC.
- Step 2.** Download the object to your printer.  
 After you compile the JSL, download it to your printer. You can use job \$DJDECPY (refer to figure 5-6) in XPFSAMP to download the JSL. Modify this job by replacing 'DFAULT' with the compiled file's name and 'JSL' with the compiled file type (JDL, PDE, or CME) and making any other necessary changes. Submit it to download the object file.

## Option 2: All other printers

### Step 1. Download the source to your printer.

After you edit the JSL, download it to your printer. There are two jobs in XPFSAMP you can use to download the JSL: \$DJDECPY (refer to figure 5-6) and \$HOSTCPY (refer to figure 5-7). To use \$DJDECPY, your printer must be online and using V2 OSS or higher. Use \$HOSTCPY if your printer is using V10 OSS; the printer must be in hostcopy mode. Modify the appropriate JSL download job as required and submit it to download the JSL.

### Step 2. Compile your JSL on the printer using your printer's PDL compiler.



**CAUTION:** You must ensure that the PDL members compiled on the printer are identical to those loaded to the native PDL libraries, or your results will be unpredictable.

Figure 5-6. \$DJDECPY JCL for downloading JSL

```
//job-name JOB (ACCT, ROOM), 'DOWNLOAD DFAULT.JSL', CLASS=A, MSGCLASS=Y
//*
//* DOWNLOAD DFAULT.JSL TO A CENTRALIZED PRINTER USING FILE= DJDE
//*
//OUTP OUTPUT PRMODE=DJDE
//*
//DJDECOPY EXEC PGM=IEBGENER      ===>Change following @@DJDE to <===
//SYSIN DD DUMMY                  ===>match your IDEN if it is <===
//SYSPRINT DD SYSOUT=*            ===>different (2 places). <===
//SYSUT1 DD *
@@@DJDE FILE=(DFAULT, JSL, C, P, 9999), END;
/*
// DD DISP=SHR, DSN=prefix.XPFSAMP(DFAULT) <===Your XPFSAMP lib
// DD *
@@@DJDE FILE=(END, , C), END;
/*
//SYSUT2 DD SYSOUT=X, OUTPUT=*.OUTP
//
```

Figure 5-7. \$HOSTCOPY JCL for downloading JSL

```

//job-name JOB (ACCT, ROOM), 'HOSTCOPY DFAULT. JSL', CLASS=A, MSGCLASS=Y
//*
//*   DOWNLOAD DFAULT. JSL TO A CENTRALIZED PRINTER USING HOSTCOPY
//*
//HOSTCOP1 EXEC PGM=IEBGENER
//SYSPRI NT DD  SYSOUT=*
//SYSIN      DD  DUMMY
//SYSUT2     DD  DSN=&&FEED, UNIT=SYSDA, SPACE=(TRK, (10, 5)), DISP=(, PASS),
//            DCB=(RECFM=F, LRECL=80)
//SYSUT1     DD  *
$$$START DFAULT, JSL
//*
//            DD  DISP=SHR, DSN=prefix.XPFSAMP(DFAULT) <===Your XPFSAMP lib
//            DD  *
$$$END
//HOSTCOP2 EXEC PGM=IEBGENER
//SYSIN      DD  DUMMY
//SYSPRI NT DD  SYSOUT=*
//SYSUT1     DD  DSN=*, HOSTCOP1. SYSUT2, DISP=(OLD, DELETE)
//SYSUT2     DD  UNIT=ucb <===address of printer
//

```

## Setting up your JSL for HPIP (optional)

For XPAF to work with HPIP, you may be required to modify the JSL on the printer. The procedure you use depends on which JSL you use:

- If you use the DFAULT.JSL distributed with XPAF, simply download the JSL to the printer and compile it with the PDL compiler. For complete instructions on downloading the JSL, refer to “[Step 4 – Compile the PDL source](#)” earlier in this chapter.
- If you use a custom JDL, you must modify it for offline operation with HPIP. XPAF should continue to reference the online version of this JDL, and the printer should use the modified offline version. For complete instructions on using a custom JDL, refer to *HPIP Installation and User Guide*.

## Create/Modify paper-related tables

---

The paper-related tables are a set of tables used by XPAF to determine paper size, AFP bin number, and paper tray processing:

- The paper name table is used to assign paper sizes to paper names. XPAF uses these values to determine which paper size to use when formatting a document.
- The varying paper size table is used to map AFP bin numbers to paper names. These paper names are then matched to paper sizes in the currently active paper name table.
- The cluster mapping table is used to map centralized paper tray cluster names to paper trays on decentralized and PCL-capable printers. Each paper tray is mapped to a tray select character and a paper name which is then matched to a paper size in the currently active paper name table.

Before printing the IVPs or any documents through XPAF, review the default paper-related tables to determine if you need to create new tables for your site. If so, use the Maintain Paper Tables option on the Manage Tables menu in XOAF to create new tables, add entries to existing tables, or modify entries.

For more information on paper-related tables and instructions on using the XOAF Maintain Paper Tables option, refer to [Section Three: Managing Resources with XPAF](#).

## Setting up your printers

---

You must set up your printers to enable them to print documents from XPAF. The method for setting up printers is different depending on the type of printer you have:

- For centralized printers, edit the HIP.LIB file (or the HIP.CMD file for printers running V2.1 OSS) to specify whether you want to run the printer in HIP mode or to use the 871 CM. For complete instructions, refer to chapter 12, "[Setting up centralized printers](#)."
- For decentralized and PCL-capable printers, use the printer's setup function to set up the printer. Each decentralized and PCL-capable printer uses a different setup function. For complete instructions, refer to the documentation distributed with the printer.

For additional information on setting up your printers to run with XPAF, refer to the relevant printer chapter later in Section Two.

## Setting up printer profiles

---

Printer profiles are site-dependent printer definitions that must be created before you can print documents through XOSF.

Each printer controlled by XPAF requires a printer profile. Profiles are stored in the library referenced by the PROFDD initialization parameter. This library is read each time an XPAF-controlled printer is started.

### Creating printer profiles

---

Sample printer profiles for each XPAF-supported printer are provided in the PROFILES member in XPFSAMP. The samples include prototype statements which show the profile parameter defaults that are being used.

Follow this procedure to create a printer profile:

- Step 1.** Copy the PROFILES member in XPFSAMP to the library that is referenced by the PROFDD initialization parameter. During the copy, rename the PROFILES member to match the JES printer name of the printer for which you are creating a profile.

Example:

JES printer name = PRT7016  
Rename PROFILES to PRT7016



**NOTE:** When naming your printer profiles, non-JES spooling subsystems allow you to specify alphanumeric printer names that do not begin with PRT.

- If you are a CMA-SPOOL or CA-SPOOL user, ensure that your profile names correspond to the companion CMA-SPOOL or CA-SPOOL printer definitions.

- If you are an XDS user, the printer profiles used for jobs submitted by XDS are those defined for the XOSF which processes the job.

- Step 2.** Edit the new member. Delete the prototype statements for all printer models except the model for which you are creating a profile.
- Step 3.** Edit the prototype statement for your printer model.
- Step 4.** Save the member. The next time you start the printer, XPAF reads the library referenced by the PROFDD initialization parameter and makes this printer profile available.

Refer to the PROFILES member in XPFSAMP for sample printer profiles for all printers supported by XPAF.

## Sample profile

---

A sample printer profile is shown below:

```
*PRT4197
DEVI CE=4197
CONVERTER=AGI LE,
LI BRARY=TABLELI B,
LUTYPE=LU1,
MODE=EBCDI C,
SHARE=YES,
SLU=SLU2222,
WRI TER=REMOTE
```

## Editing printer profiles

---

Follow this procedure to edit a printer profile:

- Step 1.** Edit the member in the library referenced by the PROFDD initialization parameter. The member name is the same as the JES printer name. For a description of the parameters, refer to [Section Five: XPAF Parameter and Keyword Reference](#).
- Step 2.** Save the member.
- Step 3.** Start the printer. The revised parameters are read from the library referenced by the PROFDD initialization parameter.

If the printer that uses the edited profile is already started, you must drain then restart it before the revised parameters become effective.

## Installing multiple copies of XOSF

---

You can install multiple, concurrent copies of XOSF. This may be helpful, for example, if you want to run separate test and production systems when you receive a new version of the software. You can then maintain your current production schedule while you test the new version.

### Using with JES

---

For each unique copy of XOSF, you must complete these steps:

- Step 1.** Designate a unique subsystem name and define it in the MVS subsystem names list found in the IEFSSNnn member of SYS1.PARMLIB.
- Step 2.** Define a unique FSSDEF statement to JES, specifying the newly created start-up proc. Refer to “[Defining XPAF to JES](#)” earlier in this chapter.
- Step 3.** Define the unique set of printers to be controlled by this copy of XOSF, specifying the newly defined FSSDEF statement.
- Step 4.** Create a unique procedure in SYS1.PROCLIB.
- Step 5.** Create a new XINPARM dataset or share the existing dataset.

If you share the existing dataset, these parameters cannot be shared among multiple copies of XOSF:

- ACB (if you are using remotely-attached printers)
- ALOGDSN
- SUBSYS
- XLOGDSN

To override the current XINPARM values for these or any other initialization parameters you want to override, add the parameters to the PARM statement in the appropriate XOSF start-up proc. Overriding initialization parameters is explained in [Section Five: XPAF Parameter and Keyword Reference](#).

- Step 6.** Specify a unique XLOGDSN dataset name for each XOSF session. For more information on the XLOGDSN parameter, refer to [Section Five: XPAF Parameter and Keyword Reference](#).
- Step 7.** Determine whether you want to share printer profiles among all copies of XOSF or create separate printer profiles for each XOSF. This may depend in part on whether you share the XINPARM library among all copies of XOSF.

#### Option 1: Share printer profiles among all copies of XOSF

Ensure that printer profiles for all printers controlled by the multiple copies of XOSF must reside in the dataset identified by the PROFDD initialization parameter.

Be aware that if you are installing copies of XOSF on different MVS systems and want to share printer profiles, a conflict will arise if there is a printer with the same name but different characteristics on two or more MVS systems. Therefore, ensure that two or more printers with different characteristics do not share the same JES printer name.

**Option 2: Use separate printer profiles**

Create a separate printer profile dataset for each copy of XOSF. Include in each dataset only the profiles for the printers that are controlled by the copy of XOSF with which the dataset is associated.

If you are sharing a XINPARM library among all copies of XOSF, identify the printer profile dataset by including the PROFDD initialization parameter on the PARM statement in the XOSF start-up proc. If you are using a separate XINPARM dataset for each copy of XOSF, identify the printer profile dataset by including the PROFDD initialization parameter in the XINSXOSF member.

For instructions about setting up printer profiles, refer to “[Setting up printer profiles](#)” earlier in this chapter.

## *Using multiple copies of XOSF with non-JES subsystems*

---

You may use multiple copies of XOSF with non-JES subsystems. However, certain restrictions or limitations may apply, as described in this section.

### *CMA-SPOOL or CA-SPOOL*

---

For each unique copy of XOSF, you must define a unique FSSDEF statement to CMA-SPOOL or CA-SPOOL, specifying the newly created start-up proc.

### *XDS*

---

If you have multiple copies of XOSF installed and want to use XDS with more than one copy, you must define a unique copy of XDS for each XOSF.

To run more than one copy of XDS on one CPU, follow this procedure:

- Step 1.** Create a unique XOSF start-up proc for each XDS subsystem you run.
- Step 2.** Add the XOSF start-up proc name for each XDS subsystem to the SYS1.PARMLIB(IEFSSNxx).
- Step 3.** Update these members in SYS1.PARMLIB:
  - COMMNDxx
  - LNKLISTxx
  - IEAAPFxx
- Step 4.** For each copy of XDS, create XDSSTART and XDSSTOP procs with unique names.
- Step 5.** Uniquely define the required initialization parameters.

## Verifying the installation

---

You can verify the accuracy of your software installation by running the installation verification procedure (IVP). For more information about performing an IVP, refer to chapter 16, "[Performing an installation verification procedure](#)."



---

**NOTE:** To use a DJDE IDEN that is different from the one used by XPAF, you should run your IVPs before customizing your system.

---

## 6. *Setting up system-level features*

---

XPAF provides additional customization features which are set up at the system level. This section describes these features and provides instructions on using them with XPAF:

- Enabling banner page processing
- Using SMF recording
- Printing output to tape and/or disk
- Tailoring the DCF/SCRIPT environment

### *Enabling banner page processing*

---

Banner pages, also known as separator pages, are issued with a print job and contain certain job information, such as the user ID, job ID, and print date. A banner page may be issued as a header page before each print job, as a trailer page after each print job, and as a separator page between each dataset.

### *Default banner pages*

---

Unless you specify another format, XPAF uses its default format for banner pages. The format of banner pages at your site can be changed through parameters, keywords, or user exits. To use default or custom banner pages at your site, you must specify the JES printer definition or operator command to enable banner pages on your system.

The DFAULT member in XPFSAMP contains sample JSL statements for detecting banner header and trailer pages produced by XPAF. This member is set up for the default banner page format. If you use a banner page format other than the default, you may have to modify a copy of DFAULT and make the corresponding changes to the PDL on your printers.

Samples for user exit 05, also in XPFSAMP, produce banner pages. You can use these samples or create your own user exit 05 to customize banner pages for your site. The following sections explain in more detail any necessary system modifications for banner pages.

## JES definitions/commands that affect banner pages

When using either default or customized banner pages, you must specify the JES printer definition or operator command to enable the type of separator pages you want to use: header, trailer, and/or dataset.

This table lists, by JES release level, the parameters that must be included in your JES printer definition to enable banner pages:

Product	Version	Header separator specification	Trailer separator specification	Dataset separator specification
JES2	4.2 and higher	SEP=YES	SEP=YES	SEPDS=YES
JES3	All versions	HEADER=YES	BURST=YES	HEADER=YES

For example, this printer definition would enable header, trailer, and dataset separator pages for JES2 versions 4.2 and higher for printer PRT1121:

```
PRT1121 FSS=XPAF,MODE=FSS,NPRO=0,UCS=0,
      SEP=YES,SEPDS=YES
```

This JES2 operator command will turn on header, trailer, and dataset separator pages:

```
$TPRTnnnn,S=Y,SEPDS=Y
```

where

*nnnn*            The printer ID number.

S                Specifies the header and trailer separator pages.

SEPDS           Specifies the dataset separator page.

This JES3 operator command will turn on header, trailer, and dataset separator pages:

```
*R device-name,H=Y,B=Y
```

where

*device-name*    The printer name.

H                Specifies the header and dataset separator pages.

B                Specifies the trailer separator page.

## Parameters and keywords that affect banner pages

---

This selection describes the XPAF and IBM parameters and keywords that affect banner page processing are described here. For more information about these parameters and keywords, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

The BANSTYLE initialization parameter, printer profile parameter, and extended JCL keyword are used to specify one of the predefined banner page styles supplied with XPAF or a custom style defined by you in user exit 05. BANSTYLE=XPAF is the default setting, and BANSTYLE=JES specifies the JES style banner pages. To use a customized banner page style, specify BANSTYLE=xxxx, where xxxx is the name of your customized banner page style. XPAF passes this value to the XDIBBANS field in @XDIB in user exits 02 and 05. You must code the format for the customized banner page style in your user exit 05.

These IBM JCL keywords can be used with your banner pages: ADDRESS, BUILDING, DEPT, NAME, ROOM, TITLE, and USERDATA. These keywords can be overridden by fields in @XODB in user exit 02. The BANSTYLE extended JCL keyword also can be overridden by modifying the XDIBBANS field in @XDIB in user exit 02. The values specified in user exit 02 will be available in user exit 05.

### DJDE documents

---

For DJDE data streams, you can use the BANNERJDL initialization parameter to specify the type of DJDE packet that is used with banner pages. For DJDE and XES data streams, the BANRESET initialization parameter is used to specify if any DJDE or XES packets will be generated by the banner page routine.

### AFP documents

---

For AFP data streams, you can use these initialization and printer profile parameters to specify AFP resources with banner pages:

- AFPJOBHDR is used for the job header separator page.
- AFPJOBTLR is used for the job trailer separator page.
- AFPDSHDR is used for the dataset separator page.
- AFPMSGDS is used for the message dataset separator page.

You can specify form definitions and page definitions, as well as which font is used, with each of these parameters. For example, to use the AX0001 form definition, the A06460 page definition, and the GT20 character set on the header separator page, you would specify:

```
AFPJOBHDR=(FDEF=AX0001,PDEF=A06460,
CHARS=GT20)
```

If banner page detection is used on the trailer pages of AFP documents, you must specify N, S or O in the RSTACK initialization or printer profile parameter. Refer to [Section Five: XPAF Parameter and Keyword Reference](#) for more information on these parameters.

## *Page-formatted documents*

---

If banner page detection is used on the trailer pages of page formatted documents, you must specify N, S or O in the RSTACK initialization or printer profile parameter. Refer to [Section Five: XPAF Parameter and Keyword Reference](#) for more information on these parameters.

## *Changing the default banner page format*

---

XPAF provides two predefined banner page formats: an XPAF style and a JES style. The default banner page format is the XPAF style. To use the JES style of banner page, you must specify BANSTYLE=JES in either your initialization parameters, printer profile, or extended JCL.

Figure 6-1 shows a sample of the default (BANSTYLE=XPAF) header banner page style for JES2 systems. Figure 6-2 shows a sample of the default header banner page style for JES3 systems. Figure 6-3 shows a sample of the header banner page style if you specify BANSTYLE=JES. This JES banner page style applies to both JES2 and JES3 systems.

Figure 6-1. Sample header page using the default XPAF style banner page (JES2)

[illegible]

Figure 6-2. Sample header page using the default XPAF style banner page (JES3)

```

JJJJJJJJ AAAA AAAA DDDDDDDDDD AAAA AAAA MM MM LL SSSSSSSSS TTTTTTTTTT
JJJJJJJJ AAAA AAAA DDDDDDDDDD AAAA AAAA MMM MMM LL SSSSSSSSSS TTTTTTTTTT
JJ AA AA DD DD AA AA MMM MMM LL SSS SSS TT
JJ AA AA DD DD AA AA MM MM MM LL SSS TT
JJ AA AA DD DD AAAA AAAA MM MM LL SSSSSSSSS TT
JJ AA AA DD DD AAAA AAAA MM MM LL SSSSSSSSS TT
JJ AA AA DD DD AA AA MM MM LL SSS TT
JJ JJ AA AA DD DD AA AA MM MM LL SSS TT
JJJJJJJJ AA AA DDDDDDDDDD AA AA MM MM LLLLLLLLLL SSSSSSSSS TT
JJJJJJJJ AA AA DDDDDDDDDD AA AA MM MM LLLLLLLLLL SSSSSSSSS TT

JJJJJJJJ 0000000000 BBBB BBBB 0000000000 7777777777 8888888888 333333333 333333333
JJJJJJJJ 000000000000 BBBB BBBB 000000000000 7777777777 888888888888 3333333333 3333333333
JJ 000 000 BB BBB 000 0000 77 888 888 333 333 333
JJ 00 00 BB BB 00 00 00 77 88 88 33 33
JJ 00 00 BB BBB 00 00 00 77 888 888 333 333
JJ 00 00 BBBB BBBB 00 00 00 77 8888888888 3333333 3333333
JJ 00 00 BBBB BBBB 00 00 00 77 8888888888 3333333 3333333
JJ 00 00 BB BBB 00 00 00 77 888 888 333 333
JJ JJ 00 00 BB BB 0000 00 77 88 88 33 33
JJ JJ 000 000 BB BBB 000 000 77 888 888 333 333 333
JJJJJJJJ 000000000000 BBBB BBBB 000000000000 77 888888888888 3333333333 3333333333
JJJJJJJJ 0000000000 BBBB BBBB 0000000000 77 8888888888 333333333 333333333

PPPPPPPP RRRRRRRRRR TTTTTTTTTT 11 999999999 8888888888 333333333
PPPPPPPP RRRRRRRRRR TTTTTTTTTT 111 9999999999 888888888888 3333333333
PP PPP RR RRR TT 1111 999 999 888 888 333 333
PP PP RR RR TT 11 99 99 88 88 33
PP PPP RR RRR TT 11 999 999 888 888 333
PPPPPPPP RRRRRRRRRR TT 11 9999999999 8888888888 3333333
PPPPPPPP RRRRRRRRRR TT 11 9999999999 8888888888 3333333
PP RR RR TT 11 999 888 888 333
PP RR RR TT 11 99 88 88 33
PP RR RR TT 11 999 999 888 888 333
PP RR RR TT 1111111111 9999999999 888888888888 3333333333
PP RR RR TT 1111111111 999999999 8888888888 333333333

44 666666666 5555555555 0000000000
444 66666666666 5555555555 00000000000
4444 666 666 55 000 0000
44 44 66 55 00 00 00
44 44 66 5555555555 00 00 00
44 44 6666666666 5555555555 00 00 00
44 44 66666666666 555 00 00 00
44444444444 666 666 55 00 00 00
444444444444 66 66 55 0000 00
44 666 666 555 555 000 000
44 66666666666 5555555555 00000000000
44 6666666666 555555555 0000000000

```

Figure 6-3. Sample header page using the JES style banner page (JES2 and JES3)

```

JJJJJJJJ AAAAAAAAAA DDDDDDDDDD AAAAAAAAAA MM MM LL SSSSSSSSS TTTTTTTTTT
JJJJJJJJ AAAAAAAAAA DDDDDDDDDD AAAAAAAAAA MMM MM LL SSSSSSSSS TTTTTTTTTT
JJ AA AA DD DD AA AA MMM MM MM LL SS SSS TT
JJ AA AA DD DD AA AA MM MMM MM LL SSS TT
JJ AAAAAAAAAA DD DD AAAAAAAAAA MM MM LL SSSSSSSSS TT
JJ AAAAAAAAAA DD DD AAAAAAAAAA MM MM LL SSSSSSSSS TT
JJ AA AA DD DD AA AA MM MM LL SSS TT
JJ JJ AA AA DD DD AA AA MM MM LL SSS TT
JJ JJ AA AA DD DD AA AA MM MM LL SSS TT
JJJJJJJJ AA AA DDDDDDDDDD AA AA MM MM LLLLLLLLLL SSSSSSSS TT
JJJJJJJJ AA AA DDDDDDDDDD AA AA MM MM LLLLLLLLLL SSSSSSSS TT

JJJJJJJJ 0000000000 BBBB BBBB 11 5555555555 6666666666 44 2222222222
JJJJJJJJ 0000000000 BBBB BBBB 111 5555555555 6666666666 444 2222222222
JJ 000 000 BB BB 1111 55 666 666 4444 222 222
JJ 00 00 BB BB 11 55 66 66 44 44 22
JJ 00 00 BB BB 11 5555555555 66 44 44 222
JJ 00 00 BBBB BBBB 11 5555555555 6666666666 44 44 2222222222
JJ 00 00 BBBB BBBB 11 555 6666666666 44 44 2222222222
JJ 00 00 BB BB 11 55 666 666 4444444444 222
JJ JJ 00 00 BB BB 11 55 66 66 4444444444 22
JJ JJ 000 000 BB BB 11 555 555 666 666 44 22
JJJJJJJJ 0000000000 BBBB BBBB 1111111111 5555555555 6666666666 44 2222222222
JJJJJJJJ 0000000000 BBBB BBBB 1111111111 5555555555 6666666666 44 2222222222

**START*****JOB15642JADAMLST****START*****START*****START*****START*****START***
*
*
* JOBID: JOB15642
* JOB NAME: JADAMLST
* USERID: JADAM
* SYSOUT CLASS: 9
* OUTPUT GROUP: 2 .00001.00001
* TITLE: SYSTEM ANALYST
*
* DESTINATION: LOCAL
* NAME: JESSICA ADAMS
* ROOM: OPS LAB
* BUILDING: MAIN
* DEPARTMENT: SYSTEM OPERATIONS
* ADDRESS: 123 SUNSHINE PARKWAY
* SANDY BEACH, FL
* 32111
*
*
* PRINT TIME: 12:37:46 PM
* PRINT DATE: 10 APR 1996
* PRINTER: PRT1588
* SYSTEM ID: XE01
*
*
**START*****START*****START*****START*****START*****START*****START*****START***

```

## Using the JES style banner page

---

Figure 6-4 shows a partial listing of the DFAULT member as it is supplied in XPFSAMP. The BANNER and RAUX statements are shown in the shaded areas. This member contains two versions of these statements: one for the XPAF style banner page and one for the JES style banner page.

DFAULT is initially set up to use the default XPAF style, and the statements for the JES style banner pages are commented out. If you specify BANSTYLE=JES, you must modify the PDL. Use one of the following options to modify the PDL and ensure that the PDL on the printer matches the PDL on the host:



**CAUTION:** You must ensure that the PDL members compiled on the printer are identical to those loaded to the PDL native libraries, or your results will be unpredictable.

---

### Option 1: Editing PDL on the host

---

- Step 1.** Make a copy of the DFAULT member in XPFSAMP.
- Step 2.** In the copied member, remove the existing comments on the BANNER and RAUX statements for the JES style banner pages, and comment out the BANNER and RAUX statements for the XPAF style banner pages.
- Step 3.** Download the revised PDL member to the printer. You may use the sample \$DJDECPY member in XPFSAMP to do this.



**NOTE:** For the 4235 printer running in XPPM mode, you must compile the PDL on the host and then download it to the printer.

---

- Step 4.** On the printer, use the printer PDL command to compile the member into object code.
- Step 5.** Use one of these options to load the modified host member to the native PDL library specified in the XOSF start-up proc DD statement named by the PDLLIB initialization or printer profile parameter:
  - XOAF Load PDL option on the Load Resources menu
  - LOAD PDL TSO/batch command

Refer to [Section Three: Managing Resources with XPAF](#) for more information about the XOAF Load PDL option or LOAD PDL TSO/batch command.

### Option 2: Editing PDL on the printer

---

- Step 1.** Edit the PDL source member on the printer.
- Step 2.** Remove the existing comments on the BANNER and RAUX statements for the JES style banner pages, and comment out the BANNER and RAUX statements for the XPAF style banner pages.
- Step 3.** On the printer, use the printer PDL command to compile the member into object code.
- Step 4.** Upload the PDL source member to a PDS on the host.
- Step 5.** Use one of these options to load the modified host member to the native PDL library specified in the XOSF start-up proc DD statement named by the PDLLIB initialization or printer profile parameter:
- XOAF Load PDL option on the Load Resources menu
  - LOAD PDL TSO/batch command

Refer to [Section Three: Managing Resources with XPAF](#) for more information about the XOAF Load PDL option or LOAD PDL TSO/batch command.

Figure 6-4. Partial listing of DFAULT member (Example 1)

```

/* ***** */
/* ***** T A B L E S   &   C R I T E R I A S ***** */
/* ***** */
T1:    TABLE    MASK=(' ?' ),    CONSTANT=(' *? START JOB' ,
                                         ' *? START STC' ,
                                         ' *? START TSU' );
T2:    TABLE    MASK=(' ?' ),    CONSTANT=(' *? END JOB' ,
                                         ' *? END STC' ,
                                         ' *? END TSU' );
T3:    TABLE                                CONSTANT=X' 1313131313131313' ;
T5:    TABLE    MASK=(A' ?' ),    CONSTANT=(A' *???START???JOB' ,
                                         A' *???START???STC' ,
                                         A' *???START???TSU' );
T6:    TABLE                                CONSTANT=(A' **START*****' );
T7:    TABLE                                CONSTANT=(' **START*****' );
T8:    TABLE                                CONSTANT=(' **END*****' );

/* ***** */
/* * C1 IDENTIFIES A NON-METACODE JOB HEADER PAGE * */
/* * USING THE XPAF STYLE BANNER (DEFAULT). * */
/* * C2 IDENTIFIES A NON-METACODE JOB TRAILER PAGE * */
/* * USING THE XPAF STYLE BANNER (DEFAULT). * */
/* * C3 IDENTIFIES A NON-METACODE JOB HEADER OR * */
/* * SEPARATOR PAGE USING THE XPAF STYLE BANNER. * */
/* * C4 IDENTIFIES AN RSTACK DELIMITER. * */
/* * C5 IDENTIFIES A METACODE JOB HEADER PAGE * */
/* * USING THE XPAF STYLE BANNER (DEFAULT). * */
/* * C6 IDENTIFIES A METACODE JOB HEADER PAGE * */
/* * USING THE JES STYLE BANNER. * */
/* * C7 IDENTIFIES A NON-METACODE JOB HEADER PAGE * */
/* * USING THE JES STYLE. * */
/* * C8 IDENTIFIES A NON-METACODE JOB TRAILER PAGE * */
/* * USING THE JES STYLE. * */
/* * C1T, C4T, C5T, C6T, C7T, C8T ARE USED IN THE * */
/* * OFFLINE TAPE ENVIRONMENT * */
/* ***** */
C1:    CRI T E R I A  CONSTANT=(0, 12, EQ, T1), LI NENUM=(35, 1);
C2:    CRI T E R I A  CONSTANT=(0, 12, EQ, T2), LI NENUM=(35, 1);
C3:    CRI T E R I A  CONSTANT=(0, 12, EQ, T1), LI NENUM=(50, 1);
C4:    CRI T E R I A  CONSTANT=(1, 08, EQ, T3);
C5:    CRI T E R I A  CONSTANT=(9, 16, EQ, T5);
C6:    CRI T E R I A  CONSTANT=(9, 12, EQ, T6);
C7:    CRI T E R I A  CONSTANT=(15, 12, EQ, T7), LI NENUM=(30, 10);
C8:    CRI T E R I A  CONSTANT=(15, 12, EQ, T8), LI NENUM=(30, 10);
C1T:   CRI T E R I A  CONSTANT=(1, 12, EQ, T1), LI NENUM=(35, 1);
C4T:   CRI T E R I A  CONSTANT=(2, 08, EQ, T3);
C5T:   CRI T E R I A  CONSTANT=(10, 16, EQ, T5);
C6T:   CRI T E R I A  CONSTANT=(10, 12, EQ, T6);
C7T:   CRI T E R I A  CONSTANT=(16, 12, EQ, T7), LI NENUM=(30, 10);
C8T:   CRI T E R I A  CONSTANT=(16, 12, EQ, T8), LI NENUM=(30, 10);

```

Figure 6-5. Partial listing of DFAULT member (Example 2)

```

/* ***** */
/* ***** TEST FOR BANNER PAGE ***** */
/* ***** NON - METACODE ***** */
/* ***** XPAF STYLE ***** */
/* ***** */

      BANNER TEST=(C1 OR C2),
      HJOBNO=(12, 5),
      HRPTNA=(18, 8),
      HCOUNT=1,
      TCOUNT=1;

/* ***** */
/* ***** TEST FOR BANNER PAGE ***** */
/* ***** NON - METACODE ***** */
/* ***** JES STYLE ***** */
/* ***** */

/*      BANNER TEST=(C7 OR C8),
/*      HJOBNO=(30, 5),
/*      HRPTNA=(35, 8),
/*      HCOUNT=1,
/*      TCOUNT=1;

/* ***** */
/* ***** TEST TO FEED FROM AUX FOR A JOB HEADER ***** */
/* ***** */
/* * THIS TEST IS USED TO FEED FROM THE AUX PAPER * */
/* * TRAY FOR A JOB HEADER PAGE. * */
/* * THIS IS INTENDED TO ALLOW COLORED PAPER TO * */
/* * BE USED TO EASILY SEPARATE JOBS. IF THIS * */
/* * IS USED, THE PRINTER MUST BE SET TO FEED * */
/* * ONLY FROM THE MAIN CLUSTER (FEED MAIN). * */
/* * * */
/* * IF THIS IS NOT DESIRED, COMMENT THIS TEST OUT * */
/* * OR REMOVE IT. * */
/* ***** */

      RAUX TEST=(C1 OR C5);

/* * * * FEED HDR FROM AUX TRAY */
/* * * * */
/* * * * * METACODE HEADER */
/* * * * * FOR XPAF STYLE */
/* * * * * */
/* * * * * * NON-METACODE HEADER */
/* * * * * * FOR XPAF STYLE */

/*      RAUX TEST=(C7 OR C6);

/* * * * FEED HDR FROM AUX TRAY */
/* * * * * */
/* * * * * * METACODE HEADER */
/* * * * * * FOR JES STYLE */
/* * * * * * */
/* * * * * * * NON-METACODE HEADER */
/* * * * * * * FOR JES STYLE */

```

## *Using a custom banner page*

---

If neither of the supplied styles fits your needs, you can create your own user exit 05 to customize the banner pages used at your site. Review the comments in the sample user exit members in XPFSAMP for more information on how to create your own user exit.

If you change the banner page format so that the banner page detection CRITERIA statements in the DFAULT member are no longer accurate, you also must make a copy of the DFAULT member in XPFSAMP, make the necessary modifications for the customized banner page style, and make these corresponding changes to the PDL on your printers. Recompile the PDL on your printers, and reload the modified host member to your native PDL library.

Refer to your printer's PDL/DJDE reference manual for a complete explanation of the banner page detection CRITERIA statement. Refer to the procedures in "[Using the JES style banner page](#)" earlier in this chapter for a detailed explanation of how to update PDL on both your printers and the host.



---

**CAUTION:** You must ensure that the PDL members compiled on the printer are identical to those loaded to the native PDL libraries, or your results will be unpredictable.

---

## *Using banner pages on decentralized and PCL-capable printers*

---

By default, all of the banner page formats described in this section are for use on centralized printers. To use any of these formats on decentralized and PCL-capable printers, you must change the SETC statement in sample user exit XUXIT05B from 'REMOTE' to 'LOCAL'. For more information on how to modify user exits, refer to chapter 7, "[Coding the XPAF user exits](#)."

## Using SMF recording

---

XPAF supports IBM's SMF recording capability. XPAF writes an enhanced SMF type 6 PSF record when document processing is complete. When SMF recording has been activated, these records are stored in the system SMF dataset.

While XPAF supports SMF recording for printing via TCP or BARR configurations and other intermediate spooling devices, note that for these configurations your SMF records will reflect job creation information instead of actual printing information. Therefore, you may see differences in your SMF statistics for these types of jobs. For example, the SMF record will be updated even if the job did not print.

XPAF also supports SMF recording when running in either XPSC-compatibility mode or XPAF full-client mode:

- In XPSC-compatibility mode, XPAF writes one SMF record in the XPSM format.
- In XPAF full-client mode, you may have XPSM write either an SMF record for XPAF processing; an SMF record for XPSM processing; or two records, one for each type of processing.




---

**NOTE:** The SMF record written by XPSM is not a type 6 record.

---

For further information on SMF recording for XPSM, refer to the XPSM user documentation. For information on activating SMF recording, refer to the next section in this chapter.

## Activating SMF recording

---

To generate SMF records for XPAF automatically, specify **SMF=Y** in either the XINSXOAF or XINSXOSF member of XINPARM.

When running XPAF in XPSC-compatibility mode or XPAF full-client mode, specify **XPSMBRS** and/or **XPSMSRS** in the XINSXOSF member of XINPARM to generate SMF records automatically.

For more information about these initialization parameters, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

You can also use the SET SMF RECORDING ON|OFF command to turn SMF recording on or off. For more information about this operator command, refer to [Section Seven: XPAF Operator Guide](#).

## Fields updated during SMF recording

Some fields in the record are updated by XPAF processing, while others are not. Tables 6-1 through 6-3 show all SMF type 6 PSF fields for which IBM provides documented support and identifies which of these fields are updated by XPAF. For a thorough description of SMF, refer to the appropriate MVS SMF publication.

Table 6-1. SMF record type 6 PSF fields updated by XPAF (standard data)

Standard data section				
Offset	SMF field	Length	Description	Comments
5	SMF6RTY	1	Record type	X'06'
6	SMF6TME	4	Time record moved to SMF buffer	Supplied by MVS SMF routine
10	SMF6DTE	4	Date record moved to SMF buffer	Supplied by MVS SMF routine
14	SMF6SID	4	System identification	JES system ID from CVT
18	SMF6JBN	8	Job name	Job name from XDIBJNAM
26	SMF6RST	4	Reader start time	Reader start time from XDIBJTIM
30	SMF6RSD	4	Reader start date	Reader start date from XDIBJTIM
34	SMF6UIF	8	User identification	User identification from XDIBUSER
42	SMF6OWC	1	SYSOUT class	SYSOUT class from XDIBSOCL
43	SMF6WST	4	Writer start time	Time XOSF started printing
47	SMF6WSD	4	Writer start date	Date XOSF started printing
51	SMF6NLR	4	Number of logical records	Number of logical records processed (including multiple copies)
55	SMF6IOE	1	I/O status	X'00'
56	SMF6NDS	1	Number of datasets processed	X'01'
57	SMF6FMN	4	Form number	First 4 bytes of XDIBFORM
61	SMF6PAD1	1	Section indicator	X'E0'
62	SMF6SBS	2	Subsystem identification	X'0007'
64	SMF6LN1	2	Length of rest of record	X'001C'
66	SMF6DC1	1	Dataset control indicator	Restart information: X'08' - The job was restarted. X'10' - The job was interrupted. X'20' - The job was cancelled.

Table 6-1. SMF record type 6 PSF fields updated by XPAF (standard data) (Continued)

Standard data section				
Offset	SMF field	Length	Description	Comments
67	SMF6INDC	1	Record level indicator	X'01' - PSF 1.1 X'03' - Job number greater than 9999 X'04' - Security support X'05' - PSF 2.1
68	SMF6JNM	4	JES-assigned job number (binary)	Job number from XDIBJNO+4
72	SMF6OUT	8	Output device name	Printer name
80	SMF6FCB	4	FCB ID	Not updated by XPAF
84	SMF6UCS	4	UCS ID	Not updated by XPAF
88	SMF6PGE	4	Approximate physical page count	Number of physical sheets printed

Table 6-2. SMF record type 6 PSF fields updated by XPAF (non-impact printing subsystem data)

Non-impact printing subsystem section				
Offset	SMF field	Length	Description	Comments
2	SMF6CPS	8	Number of copies in each copy group	First copy group equals the number of copies produced, including JCL COPIES, XCOPY, and DJDE COPIES. Copy groups 2 - 8 = 0.
10	SMF6CHR	16	CHARS values	Four 4-byte CHARS values, as specified in the JCL
26	SMF6MID	4	Copy modification name	Not updated by XPAF
30	SMF6FLI	4	Name of forms overlay	FORM name from XDIBFORM
34	SMF6FLC	1	Number of copies on which the form is printed	Same value as SMF6CPS
35	SMF6BID	1	Options indicator	X'40' - OPTCD=J X'20' - Cut sheet printer

Table 6-3. SMF record type 6 PSF fields updated by XPAF (APA printing subsystem)

All-points-addressable printing subsystem section				
Offset	SMF field	Length	Description	Comments
4	SMF6FONT	4	Number of fonts used	Number of fonts used
8	SMF6LFNT	4	Number of fonts loaded	Number of fonts downloaded
12	SMF6OVLY	4	Number of overlays used	Number of forms used
16	SMF6LOLY	4	Number of overlays loaded	Number of forms downloaded
20	SMF6PGSG	4	Number of page segments used	Number of images used
24	SMF6LPSG	4	Number of page segments loaded	Number of images downloaded
28	SMF6IMPS	4	Number of sides of paper printed	Number of sides of paper printed
32	SMF6FEET	4	Number of feet of paper printed	Not updated by XPAF
36	SMF6PGDF	4	Number of PAGEDEFs used	Number of PAGEDEFs used
40	SMF6FMDF	4	Number of FORMDEFs used	Number of FORMDEFs used
44	SMF6BIN	1	Bin indicators	Not updated by XPAF
45	SMF6PGOP	1	Duplex indicators	Duplex and/or tumble duplex indicated
46	SMF6FLG3	1	Flags	X'00'
48	SMF6NSOL	4	Number of security overlays used	Not updated by XPAF
52	SMF6NSFO	4	Number of security fonts used	Not updated by XPAF
56	SMF6NSPS	4	Number of security page segments used	Not updated by XPAF
60	SMF6FDNM	8	FORMDEF name	FORMDEF name
68	SMF6PDNM	8	PAGEDEF name	PAGEDEF name
76	SMF6OCNM	32	Object container names	Not used by XPAF

## Printing to disk and/or tape

---

In addition to printing, you can write to disk and/or tape any document that XPAF has prepared for a centralized printer. This allows you to archive printable output for later use.

Output selection can be specified for individual documents using extended JCL keywords or for all documents directed to a printer using printer profile parameters.

### Checklist for printing to disk and/or tape

---

Perform these steps, in the order they appear, to print your documents to tape and/or disk. As you complete each step, enter a check in the checklist to track and record your progress.

Step	Action	Completed
1	Add necessary initialization parameters	
2	Specify WRITER printer profile parameter	
3	Specify OPWRITER extended JCL keyword (optional)	
4	Modify printer profile for resource management	

### Step 1 – Add necessary initialization parameters

---

To support the OPWRITER extended JCL keyword and the WRITER TAPE/DISK printer profile parameter, specify these initialization parameters in the XINSXOSF member of XINPARM:

- OPDALLOC
- OPDUNIT
- OPHLQ
- OPTEXPDT
- OPTUNIT
- OPTVOLCT
- OPVOLSER

These parameters are required for dynamic allocation of tape and/or disk datasets. For a complete description of these parameters, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

## Step 2 – Specify WRITER printer profile parameter

---

To direct all documents transmitted to a specific centralized printer to tape and/or disk, you must specify the WRITER parameter in the printer's profile. For a complete discussion of this parameter, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

## Step 3 – Specify OPWRITER extended JCL keyword (optional)

---

To direct a specific document to any supported combination of printer, tape, and/or disk, you must specify the WRITER printer profile parameter or OPWRITER extended JCL keyword. For more information about the WRITER printer profile parameter or the OPWRITER extended JCL keyword, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

## Step 4 – Modify printer profile for resource management

---

When writing a print job to tape only, you can control whether the resources required to print the job are written to the tape. You can use either of these options:

- Download all required resources to the tape; all resources required to print any job on the tape are downloaded to the tape. To set up this option, you must use these printer profile parameter settings:

```
LIBRARY=,  
XNS=NO,  
WRITER=TAPE
```

- Do not download any required resources to the tape; no resources referenced by any job on the tape are written to the tape. To set up this option, you must use these printer profile parameter settings:

```
LIBRARY=,  
FEATURE=NODOWNLOAD,  
XNS=NO,  
WRITER=TAPE
```

If you use this option, the required resources must be available on the printer when you ultimately print the job. If any required resources are missing, the job will fail at the printer.

## Tailoring the DCF/SCRIPT environment

---

If you use DCF/SCRIPT to create documents, XPAF allows you to format your documents using Xerox fonts. Since Xerox fonts are designed to print at 300 dpi and IBM fonts at 240 or 300 dpi, you must first update the necessary tables and profiles, then convert the Xerox fonts. This section provides instructions for performing these steps.

### Checklist for tailoring the DCF/SCRIPT environment

---

As you complete each step, enter a check in the Completed column to track and record your progress.

Step	Action	Completed
1	Update the logical device table	
	A Specify the logical device name (LD)	
	B Specify the physical device name (PD)	
	C Specify the default font (DF)	
	D Define the page formatting parameters (PL)	
	E Reassemble and link-edit the LDT	
2	Update the physical device table	
	A Specify the physical device name	
	B Specify the output type	
	C Indicate the default font library	
	D Specify the page segment library	
	E Specify the baseline shift	
	F Specify the rotation	
	G Specify the inter-character spacing	
	H Specify the horizontal and vertical resolution	
	I Reassemble and link-edit the PDT	

Step	Action	Completed
3	Update the Generalized Markup Language profile	
	A Establish the default PI font	
	B Establish the 38PP printer default fonts	
	C Substitute the physical device name	
4	Convert the Xerox fonts	



**NOTE:** You only need to perform these steps if you plan to use Xerox fonts with the DCF/SCRIPT environment.

For additional information about the Logical and physical device tables, refer to IBM's *Document Composition Facility SCRIPT/VS Text Programmer's Guide*.

## Step 1 – Update the logical device table

The logical device table (LDT) allows you to access and select certain adjustable print format settings. For example, you can use the LDT to specify the font, page length, and page width to be used repeatedly for a particular type of document (such as an internal memo).

### Step 1A – Specify the logical device name

Specify the name to be used in the DEVICE option of SCRIPT. This name must begin with an X and may be followed by up to seven additional characters. The X prefix informs XPAF that native Xerox fonts are present in the document and that font mapping and resolution conversion are not required.

When a document is generated, DCF/SCRIPT inserts a NOP structured field as the first record in the document. This NOP structured field contains the specifications entered in the LDT and is examined by XPAF to determine if Xerox fonts are present.

For example, to use the logical device name `XRXSTDPG`, enter **LD=XRXSTDPG**.

### Step 1B – Specify the physical device name

Specify the name of the printer which will be used to print the document. This name must match the name contained in the appropriate PDT.

For example, to print documents to printer `XRX9700F`, enter **PD=XRX9700F**.

### Step 1C – Specify the default font

---

Specify the font to be used when none is specified in the document. The default font must specify the IBM-coded font name for a converted Xerox font. This name must have a prefix of *Xn*, where *n* identifies the IBM orientation.

Valid values for *n* are:

- 1 Portrait
- 2 Landscape
- 3 Inverse portrait
- 4 Inverse landscape

For example, to specify the font UN110E in IBM portrait orientation, enter **DF=X1UN110E**.

### Step 1D – Specify the page formatting parameters

---

Define the necessary page formatting values using these parameters:

- PL Page length
- PW Page width
- LL Line length
- TM Top margin
- BM Bottom margin

Table 6-4 shows valid page width and page length values (in dots) for several different page sizes.

Table 6-4. Page width and length values

Page size	Page width (dots)	Page length (dots)
8.5 by 11 inch page (letter)	2550	3300
8.5 by 14 inch page (legal)	2550	4200
11 by 17 inch page (long)	3300	5100
8.27 by 11.69 inch page (A4)	2481	3507
11.69 by 16.54 inch page (A3)	3507	4962

### Step 1E – Reassemble and link-edit the LDT

---

Once modified, reassemble the LDT and link-edit the results.

## Sample LDT

---

Using the examples defined above for an 8.5 by 11 inch page with a line length of 6 inches, a top margin of .5 inch, and a bottom margin of .5 inch, the code for the LDT might look like this:

```
DSMLDTLD=XRXSTDPG,  
PD=XRX9700F,  
DF=X1UN110E,  
PL=3300, PW=2550, LL=1800, TM=150, BM=150
```

## Step 2 – Update the physical device table

---

The physical device table (PDT) allows you to specify the characteristics of the printer to be used as the output device. For example, you can specify the horizontal and vertical resolution for a printer. Each printer has a physical device table entry.

### Step 2A – Specify the physical device name

---

Specify the physical device name referenced in the logical device table. For example, to print documents to printer XRX9700F, enter **PD=XRX9700F**.

### Step 2B – Specify the output type

---

Specify the type of data stream to be generated. Set this value to **38PP** so SCRIPT generates an output stream emulative for an IBM 3800 page printer.

For example, to generate 38PP type documents, enter **OD=38PP**.

### Step 2C – Specify the default font library

---

Specify the library where the default font specified in the LDT is stored. You should use the distributed dataset AFPFONTS.

For example, to use the library that contains the 38PP fonts as the default font library, enter **FL=FONT38PP**.

### *Step 2D – Specify the page segment library*

---

Specify the library where page segments are stored.

For example, to use the library that contains the 38PP page segments, enter **PSL=PSEG38PP**.

### *Step 2E – Specify the baseline shift*

---

Specify **BSS=ALL** to indicate that both positive and negative values are supported.

### *Step 2F – Specify the rotation*

---

Specify **ROT=(0,90,180,270)** to indicate that all four rotations are supported.

### *Step 2G – Specify inter-character spacing*

---

Specify **ICS=ALL** to indicate that both positive and negative values are supported.

### *Step 2H – Specify the horizontal and vertical resolution*

---

Specify **HR=300** and **VR=300** for Xerox printer resolution.

### *Step 2I – Reassemble and link-edit the PDT*

---

Once modified, reassemble the PDT and link-edit the results.

### *Sample PDT*

---

Using the examples defined above, the code for the PDT might look like this:

```
DSMPDTPD=XR9700F,  
OD=38PP,  
FL=FONT38PP, PSL=PSEG38PP,  
BSS=ALL, ROT=(0, 90, 180, 270), ICS=ALL,  
HR=300, VR=300, FSS=512
```

## Step 3 – Update the Generalized Markup Language profile

---

The Generalized Markup Language (GML) profile (DSMPROF3 or DSMPROF4) must be modified so that the execution path for the Xerox printer is the same as the IBM 3800 page printer. Make these changes to the GML profiles.

### Step 3A – Establish the default PI font

---

To establish the default PI font for the Xerox printer:

after this line:

```
.if &$PDEV eq 38PP .df @pi@ul type ('pi sans serif' 8) codepage t1gpi363
```

enter this line of code:

```
.if &$PDEV eq XRX9700F .df @pi@ul type ('pi sans serif 8') codepage t1gpi363
```

### Step 3B – Establish the 38PP printer default font

---

To establish the 38PP printer default fonts for the Xerox printer:

after this line:

```
.if &$PDEV eq 3800 .or &$PDEV eq 1403 .se @suprstyl = nums
```

enter this line of code:

```
.if &$PDEV eq XRX9700F .go 38PP
```

### Step 3C – Substitute the physical device name

---

Substitute the correct physical device name for the specified Xerox printer, if different than the 9700 printer.

## Step 4 – Convert the Xerox fonts

---

You must convert the Xerox fonts so that the font's metrics are made available to DCF/SCRIPT. For information on converting Xerox font attributes to IBM font attributes, refer to [Section Three: Managing Resources with XPAF](#).

## 7. Coding the XPAF user exits

---

This chapter describes the procedures used for coding the XOAF and XOSF user exits for XPAF.

### Coding the XOAF user exit (XOAFUSEC)

---

You can include an optional user-written routine called XOAFUSEC in XPFLOAD to provide installation security for XOAF processing. XPFSAMP contains a sample of this routine, XOAFUSEC, which executes under TSO. This routine logs user IDs and dataset names involved in each XOAF request without disturbing XOAF processing.

XOAFUSEC is invoked after the dataset names to be referenced have been determined but before processing of the XOAF request starts. The module can communicate with XOAF by setting a return code in register 15 and by passing a message through the parameter list.

### Coding requirements

---

Keep these considerations in mind if you code your own XOAFUSEC:

- The name of the load module must be XOAFUSEC.
- XOAFUSEC must be reentrant. Use standard register linkage conventions, but remember that XPAF modules may be running in 31-bit mode.
- If it abends, XOAFUSEC is not called again during that execution of XOAF.
- The XOAF default is to allow a requested XOAF function. If XOAFUSEC is absent, abends, or sets a return code other than the one expected, the requested function is allowed.
- Do not open a dataset and keep it open across multiple executions of XOAFUSEC. XOAF cannot close such a dataset, so it will still be open if you exit and then reenter XOAF.



---

**NOTE:** User-coded exits are not serviced or supported under your Xerox Software License Agreement or Xerox Service Contract. You may be asked to remove a user-coded exit when requesting software support.

---

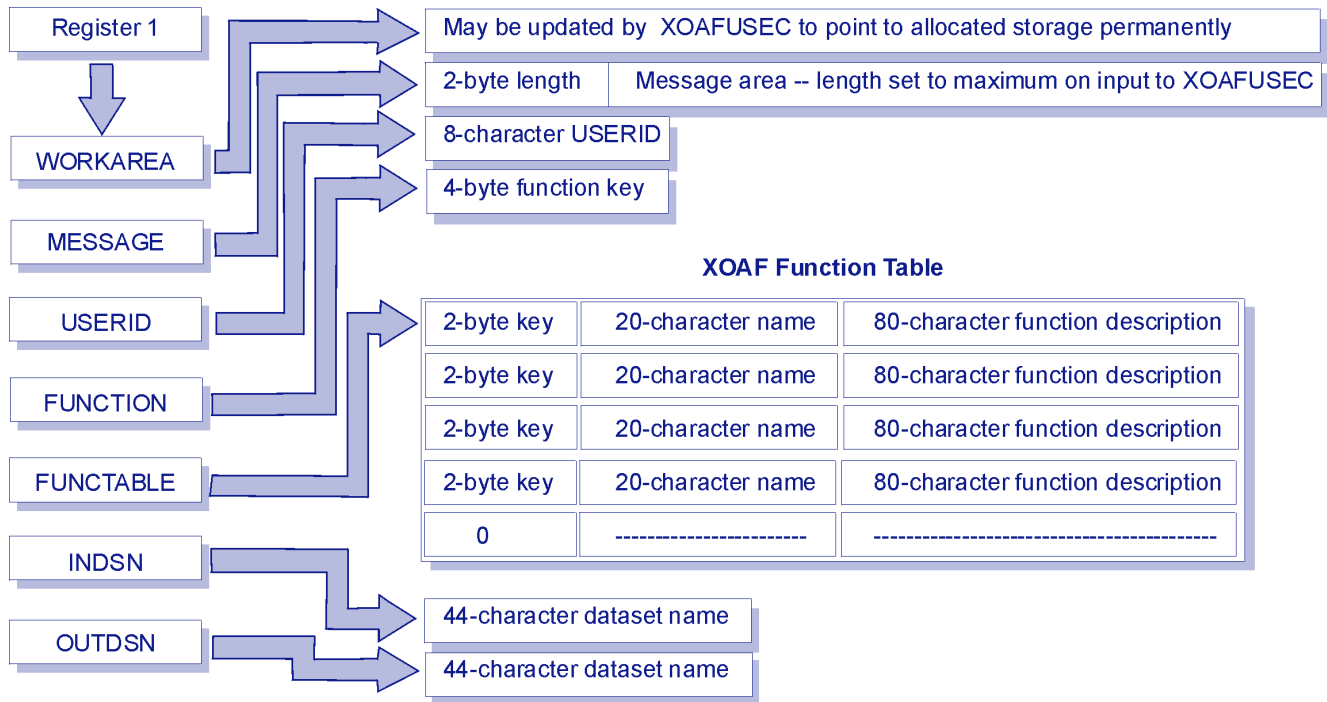
Parameter list

On entry to XOAFUSEC, register 1 points to a parameter list containing pointers to:

- The working storage for XOAFUSEC. This pointer's value is zero unless it is updated by XOAFUSEC. XOAF saves this pointer's value and returns it the next time XOAFUSEC is invoked. This process allows XOAFUSEC to allocate storage until XOAFUSEC is removed from the system.
- An area that XOAFUSEC can use to pass a message to XOAF. This pointer contains the address of a halfword binary value followed by storage for the passed message. The halfword specifies the maximum number of bytes provided for the message (at least 200 bytes). Set the halfword to the length of the passed message before returning.
- The 8-character user ID of the user making the request.
- A fullword binary value identifying the requested function in the XOAF function table.
- The XOAF function table.
- The input dataset name, if provided.
- The output dataset name, if provided.

This figure displays the parameter list passed to XOAFUSEC and the data fields to which it points.

Figure 7-1. XOAFUSEC parameter list and its data fields



## *XOAF function table*

---

The XOAF function table is provided to assist you in coding your own XOAFUSEC. Before you begin coding, dump the XOAF function table (module XOAFUNCT in the distribution load library). The table shows the functions you can request and contains:

- A halfword binary value identifying the function
- A 20-character function name
- An 80-character function description

The last entry in the table has zero in the halfword key.

## *Return codes in register 15*

---

XOAFUSEC can set these return codes in register 15:

- 00 Allow the requested function to continue. Do not check for a message to log.
- 02 Allow the requested function to continue. Log the passed message if one is provided.
- 08 Do not allow the requested function to continue.
- 12 Invalid parameters received by XOAFUSEC. Allow the requested function to continue.
- 14 Invalid parameters received by XOAFUSEC. Do not allow the requested function to continue.
- 16 XOAFUSEC internal error. Allow the requested function to continue.
- 18 XOAFUSEC internal error. Do not allow the requested function to continue.

All return codes greater than zero cause passed messages to be logged. The only return codes that prevent a request from processing are 08, 14, and 18.

## *Installing the user exit*

---

After you have coded and tested your user exit, you are ready to generate the SMP/E jobs that will install the user exit as an SMP/E usermod to your system. Refer to “[Installing user exits](#)” in chapter 3, “[SMP/E installation](#)” for a description of the #GENUXIT installation service macro and instructions on installing the user exit.

## Coding the XOSF user exits

The XOSF user exit facility provides a common interface and a common routine for calling all XOSF user exits. It includes these features:

- Provides you with a standard method for accessing information and issuing instructions to XPAF
- Uses a standard format for the input parameters to all user exits
- Uses a standard set of values to interpret the return codes from the user exits
- Provides the user exits with a common work area to facilitate communication between user exits executing in the same subtask

### User exits provided

If you need to perform a function not provided by standard XPAF code, such as customizing your banner page, you should determine if one of the XPAF-provided user exits suits your intended purpose. Table 7-1 identifies the available XOSF user exits.

Table 7-1. XOSF-defined user exits

Exit point	Purpose	Sample(s) provided	Input parameters provided
—	Generic user exit example	XUXIT00	—
01	FSA initialization	XUXIT01	XXQPPT
02	Dataset begin	XUXIT02, XUXIT02A, XUXIT02C	IATSRL, IAZCHK, IAZJSPA, \$JOE, \$JCT, XDIB, XDJD, XODB, \$FQE, \$PDDB
03	JES record	XUXIT03, XUXIT03A, XUXIT03C, XUXIT03D	Logical print record, flags, XDIB
04	XOSF dataset open	XUXIT04	XXQPPT
05	Banner page	XUXIT05, XUXIT05A, XUXIT05B, XUXIT05C	IATSRL, IAZJSPA, \$JOE, \$JCT, XDIB, XDJD, XJOBPRM, XODB, XXQPPT
06	Resource access	XUXIT06	Member name, resource type, library format, library reference method, library DD name, library dataset name, name of load module, access type
07	Resource download begins	XUXIT07	Member name, resource type, library format, library reference method, library DD name, library dataset name, name of load module
08	Resource download ends	XUXIT08	Member name, resource type, library format, library reference method, library DD name, library dataset name, name of load module, return code from resource download

Table 7-1. XOSF-defined user exits (Continued)

Exit point	Purpose	Sample(s) provided	Input parameters provided
09	SMF record	XUXIT09	SMF type 6 record
10	FSA termination	XUXIT10	—
11	XOSF dataset close	XUXIT11	XDIB
12	Writer data option	XUXIT12	Logical print record, flags, XDIB, XXQPPT
30	Messages	XUXIT30	Message flag, message text
31	Commands	XUXIT31	Command text
32	Refresh security	XUXIT32	Address of XOSF function table, function key, command value, XOSF function table

## Order of invocation

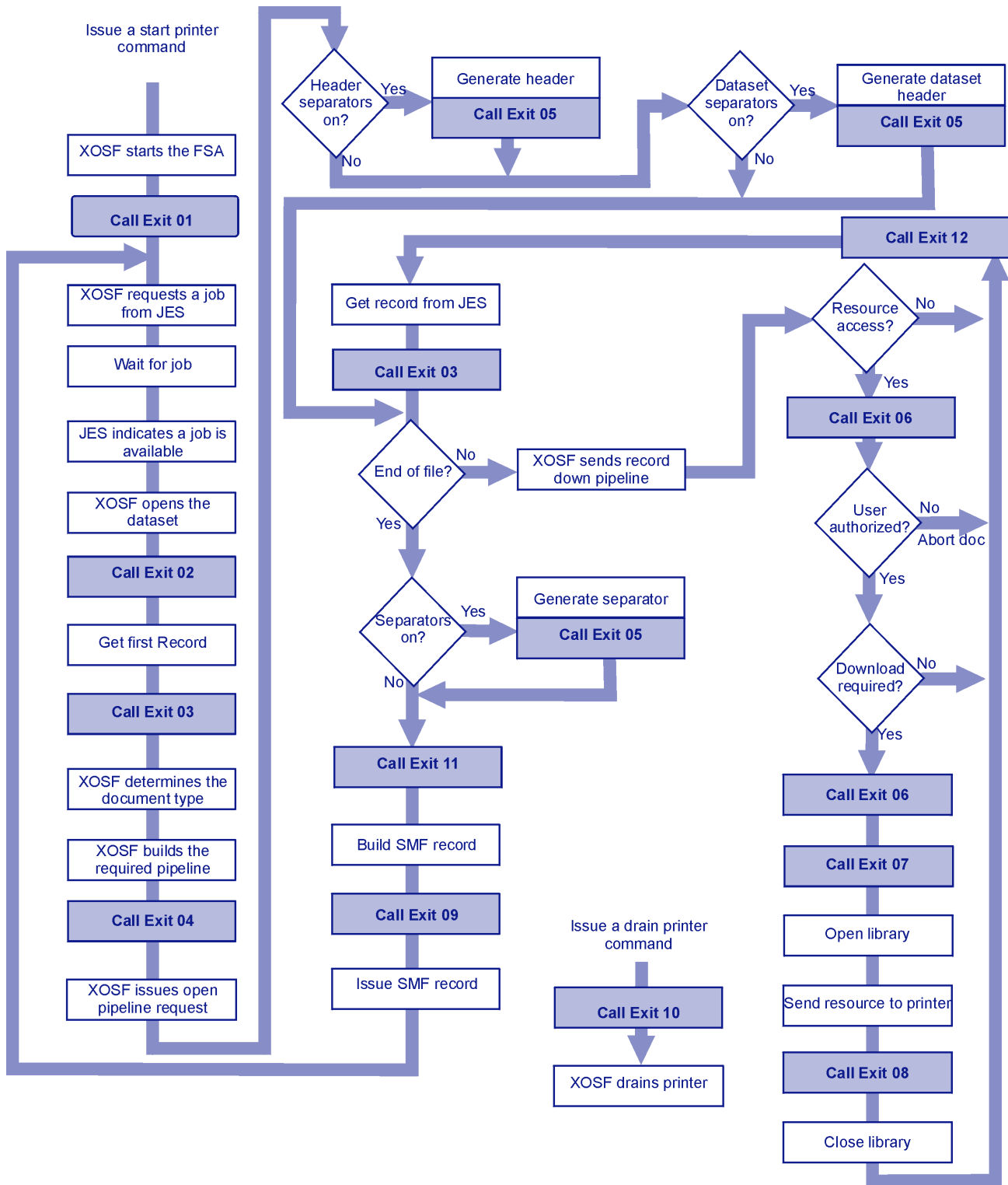
---

User exits 01 through 10, the FSA exits, are called in sequence at a predefined time between FSA start and task termination. Some user exits may be called many times for a single JES document being printed; other user exits may be called only once.

User exits 30 through 32 depend on the operating environment, so the order in which they are called cannot be determined.

Figure 7-2 shows the timing of invocation for user exits 01 through 10, and does not represent the true flow of XOSF. Refer to “[User exit descriptions](#)” later in this chapter for details on how each user exit can affect processing based on return codes from the user exit.

Figure 7-2. User exit calling order



## Sample materials

---

The installation libraries contain the mapping macros, inline code macros, testing JCL, and source code required to code an XOSF user exit. You can view the source code online or print it. After you copy it to a library or member you define, you can modify the source to create your own version of any of the user exits.

### Macros

---

XPFMAC contains the mapping macros and inline code macros for the user exit routines. When assembling any of the XOSF user exits for testing, ensure that XPFMAC and the appropriate MVS and JES MACLIBs are included in your SYSLIB concatenation.

### JCL

---

The XUXASM member in XPFSAMP contains JCL you can use to assemble and link-edit the XOSF user exits.

### Source code

---

XPFSAMP contains the source code for each of the sample user exits. These user exits are defined in “[User exit descriptions](#)” later in this chapter.

## Initialization parameter requirements

---

For each user exit you code, you must specify the user exit load module name using the USRXIT $nn$  initialization parameter. You should also set the maximum work area size required by all the user exits using the USRXITWA initialization parameter. For more information about these parameters, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

## Coding requirements

---

When planning to code an XOSF user exit, you need to consider each of the programming issues described in this section.



**NOTE:** User-coded exits are not serviced or supported under your Xerox Software License Agreement or Service Contract. You may be asked to remove a user-coded exit when requesting software support.

---

## Linkage conventions

---

You must follow standard MVS linkage conventions.

- Upon entry, register contents are as follows:
  - R1      Points to a standard MVS variable length parameter list
  - R13     Points to a standard 18 fullword MVS save area
  - R14     Contains the XPAF return address
  - R15     Contains the user exit entry point address
- All input parameters and work areas passed to the user exit are in key 8 storage, subpool 230 above the 16M line.
- The user exit is given control in storage protect key 8 and AMODE 31.
- The user exit must be written to handle input parameters and a work area residing in storage above the 16-megabyte line.
- When returning control to XPAF, you must restore register 13 to its original contents, set a return code in register 15, and branch to the address originally passed in register 14.

## Common parameters

---

Upon entry, register 1 points to the input parameter list. This input parameter list can be mapped by the @UXPL macro included in XPFMAC. It contains four fullwords that are pointers to other parameter areas. For any area that does not exist for a specific user exit, the pointer is zero. The end of the list is indicated by a 1 in the high order bit of the fullword. The input parameter list follows this format:

```
DS  A(@UXWA)Pointer to exit work area
DS  A(@UXPA)Pointer to exit specific parameters
DS  A(@UXIN)Pointer to common information area
DS  A(@UXMG)Pointer to user message area
ORG*-4Pointer to last parameter in list
DS  X'80' Indicates end of list
```

### User exit work area

The first parameter in the input parameter list is the common work area. This work area can be mapped by the @UXWA macro included in XPFMAC.

The size of the work area is specified by the USRXITWA initialization parameter, and is passed in the XPAF common information area. Check this work area field at execution time to verify that the work area is large enough before making any references to it. Use the first 18 fullwords as your standard MVS save area, and the remainder as needed by all user exits.

The area is initialized to binary zeros the first time any user exit is called in a subtask. Then, each subsequent user exit called in the same task is passed the same work area.

Since it is passed unchanged between user exits within the same subtask, the work area can be used to pass information between user exits or subsequent calls of the same user exit. Be sure to initialize all work areas properly, and ensure that all user exits are aware of the shared portion of the work area.

### User exit-specific parameter areas

The second parameter in the input parameter list points to an area containing information specific to the user exit being called. The first fullword in this area contains the length (in bytes) of the entire user exit-specific work area, including the length word itself. If the user exit has no unique parameters, the pointer to this field contains zeros.

The user exit-specific work areas can be mapped by the @UXPM macro included in XPFMAC. This macro has one required parameter: EXIT=*nn*, where *nn* is the user exit number to be mapped. For example, to map the parameters to user exit 05, the banner page exit, specify:

```
@UXPM EXIT=05
```

The @UXPM macro invokes the XPAF, MVS, JES, CMA-SPOOL, or CA-SPOOL macros to map the areas required. You must include the appropriate MACLIBs in your SYSLIB concatenation when assembling the user exit. See your OS/390 system administrator for information on your system and subsystem macro libraries.

@UXPM has the optional parameter SUBSYS=*xxx*. The valid values are either JES or CMA. The default is JES if this parameter is not specified. If you are using XPAF with CMA-SPOOL or CA-SPOOL, SUBSYS=CMA is required for exits that provide CMA-SPOOL or CA-SPOOL control blocks. Only user exit 02 uses the CMA-SPOOL and CA-SPOOL control block \$FQE. To map the parameters to user exit 02, the dataset open exit, for CMA-SPOOL or CA-SPOOL, specify:

```
@UXPM EXIT=02,SUBSYS=CMA
```

@UXPM also invokes the @UXEQ macro to generate equates for the user exit numbers and standard user exit return codes. The DSECT name is either the tag name you code in the label field of the assembler statement, or UXP*nn* (where *nn* is the 1- or 2-digit user exit number) if you do not code a tag name.

### Common information area

The third parameter in the input parameter list points to an area containing information common to all XPAF user exits. This area can be mapped by the @UXIN macro included in XPFMAC.

## Message area

The fourth parameter in the input parameter list points to the XPAF user exit message area. The message area can be mapped using the @UXMG macro included in XPFMAC.

This area is initialized to binary zeros each time a user exit is called. If you place a message length and text in this area, XPAF will issue the message through the XPAF message facility when the user exit returns control to XPAF. The return code you specify has no effect on the message facility.

The maximum length of the message is 222 bytes.

## Referencing input parameters

Use the macros shown in table 7-2 to map or reference user exit input and work areas.



**NOTE:** Most of the mapping macros are invoked dynamically by the @UXPM macro for the user exit being assembled.

Table 7-2. User exit macros

Function	Macro name	Area or routine
Map input parameter areas	@UXPL	Parameter list map
	@UXWA	XPAF user exit work area
	@UXPM	XPAF user exit-specific parameters for user exits 01–32
	@UXIN	XPAF user exit common information
	@UXMG	XPAF user exit message area
Call macros for XPAF separator exit routines	#UXITBLK	Calls XPAF separator exit block letter routine
	#UXITPRT	Calls XPAF separator exit print routine
Map XPAF parameters	@XDIB	XPAF document information block
	@XJOBPRM	XPAF separator exit parameters
	@XOSFTAB	XPAF XOSF function table
	@XXQPPT	XPAF printer profile table
Map MVS parameters	IEFJMR	MVS job management area
	IFSAMFR	MVS SMF record
Map JES common parameters	IAZCHK	JES checkpoint area
	IAZJSPA	JES job separator page area
	IAZIDX	JES index record flag

Table 7-2. User exit macros (Continued)

Function	Macro name	Area or routine
Map JES2 parameters	\$JCT	JES2 job control table
	\$JOE	JES2 job output element
	\$PDDB	Peripheral data definition block
Map JES3 parameters	IATYSRL	JES3 service request list
Map CMA-SPOOL or CA-SPOOL parameters	\$FQE	File queue element
Map user-modified record	@UXUREC	For user exit 03 only, maps a user record used as an inserted or replacement record
Equates	@UXEQ	XPAF user exit numbers and return code equates

### Return codes

At return to XPAF, all user exits should set R15 to indicate the action XPAF should take. Return code settings for each valid return code are defined by assembler EQU statements in the @UXEQ macro included in XPFMAC. This macro is called by the @UXPM macro, so you need not specify it if you use the @UXPM macro to map user exit input parameters.

The general return codes are:

Value	Meaning	@UXEQ Field Name	Value
0	Continue.	#CONTINUE	0
1–4	Bypass function.	#BYPASS	4
5–8	Purge the JES dataset.	#PURGE	8
9–16	Requeue the JES dataset.	#REQUEUE	16
17–32	Requeue and hold the JES dataset.	#HOLD	32
33–4095	Terminate the printer subtask.	#ABORT #MAXRC	64 4095
4096+	The address of the user-provided data or control block to be used in place of the one supplied by XPAF. The next time the user exit is called, the original provided record will be presented to the user exit.		

## Control blocks

---

All control blocks passed to a user exit through the user exit-specific parameters (mapped by @UXPM) are copies of the XPAF (or JES) control blocks. Therefore, any modification made to these control blocks by the user exit will be only for the benefit of that invocation of the user exit. The control block copies are not copied back to the real control blocks when the user exit returns to XOSF.

Some user exits allow certain control blocks to be modified. This is accomplished by making any modifications to the supplied control block and returning the address of that modified control block in R15. XOSF will then modify the actual control block from that copy. For an example of this procedure, refer to XUXIT02A in XPFSAMP.



**CAUTION:** When modifying the XDIB control block, failure to supply the address of the XDIB tagname 'XDIB' when you update the XDIB or its extensions will cause unpredictable results.

---

## Assembly requirements

---

A user exit must be coded in Assembler H or its equivalent. It must be reentrant and reusable, and written in AMODE 31. We recommend that you also specify RMODE ANY.

## Link-edit requirements

---

When you link-edit a user exit, you must specify RENT and REUS, and AMODE 31. We recommend that you also specify RMODE ANY.

## Load library

---

The load library containing the XPAF user exits must be specified in the UXLNKL B parameter of the #GENUXIT macro and must be in one of these places:

- XPAF procedure STEPLIB
- MVS Link List Concatenation
- MVS Link Pack Area

XPAF uses the standard MVS search order when searching for user exits in the load library. The load module name can be any name that conforms to MVS naming conventions and can not already exist in XPFLD.

## Controlling active user exits

---

You can activate and deactivate the user exits within a subtask using a fullword bit mask in the UXITXACT field of the user exit common information area. This bit mask controls which user exits will be active in each subtask. There is a unique UXITXACT for each subtask operating within XPAF. Each bit within the mask corresponds to one of the XPAF user exits; the low order bit corresponds to user exit 01, and the high order bit corresponds to user exit 32. A one bit indicates that the user exit is active, and a 0 (zero) bit indicates the user exit is inactive.

The first time a user exit is called in a subtask, the UXITXACT field is initialized; each user exit specified by the USRXITnn initialization parameter is set to 1. At this point, you can turn the bits on or off to control which user exits are called. If you turn on a bit for a user exit that has not been specified in the USRXITnn initialization parameter, the user exit is not called.

Bit map settings for each user exit are defined by assembler EQU statements in the @UXEQ macro included in XPFMAC. This macro is invoked by the @UXPM macro, so you need not specify it if you use @UXPM to map user exit input parameters.

## Debugging user exits

---

When you are debugging an XOSF user exit, perform these actions:

- Specify **ESTAE=Y** in the initialization parameters.
- Add a SYSUDUMP DD statement to the XOSF start-up proc.
- Be careful using MVS and JES macros. The MACLIBs used to assemble user exits must be the same ones used for XDIOFTAB and must be of a level supported by XPAF.
- Specify **LSQA** in the MVS dump parameters. This allows you to access user exit parameter areas and work areas in Subpool 230 for diagnostic purposes. All work and parameter areas are in key 8.
- Do not exceed the 222 byte maximum when filling the XPAF message area.
- To obtain diagnostic information from the XOSF log, code user exit diagnostics to use the XPAF message facility. Since the messages also appear at the console, you should use this function sparingly. Use XUXIT00, the generic user exit, as a prototype since it issues a message with the user exit number, name, and return code.
- If you are using user exit 05 for banner pages for JES2 printers, specify **SEP**, **SEPDS**, or both in the JES printer definition.
- Use care when planning the shared user exit work area. Since the area is shared by all user exits running in the same subtask, information can be passed between user exit calls. Ensure that no intervening calls overlay data intended for a different user exit. Create a common macro to map the common work area fields. Remember that XPAF initializes the area to binary zeros the first time a user exit is called in a subtask, but does not change the work area from that point on.

## *Installing the user exits*

---

After you have coded and tested a user exit, you are ready to generate the SMP/E jobs that will install the user exit as an SMP/E usermod to your system. Refer to “[Installing user exits](#)” in chapter 3, “[SMP/E installation](#)” for instructions.

## *User exit descriptions*

---

For each supported user exit, this section describes the purpose, input parameters, return codes, and sample(s) provided. It also identifies the point within processing when the user exit is called. For additional information about any of the user exits, refer to the comments provided within each sample user exit.

## *Generic user exit*

---

XUXIT00 is a generic sample user exit which you can use as a model for creating any XPAF user exit. The sample shows basic initialization, parameter access, and return functions. It also shows a method for passing a message back to the system for logging to the SYSLOG and XOSF log with error message number XUX2626I.

## User exit 01 (FSA start)

---

This user exit provides the earliest opportunity for initializing fields passed between user exits. It can be used to initialize work areas, counters, and other fields for use by subsequent user exits.

### When called

---

This user exit is called when the FSA (printer) is started.

### Input parameters

---

Input	Mapped by
XPAF printer profile table (also known as XPAF point product table)	@XXQPPT

### Return codes

---

Value	Meaning
0+	Continue.

### Sample user exit

---

XUXIT01 is a sample user exit 01. It performs these functions:

- Initializes the entire work area to binary zeros
- Initializes the work area device type field with dummy data
- Saves the beginning date and time
- Turns on user exit 04 in the XPAF active user exit bit mask

## *User exit 02 (Dataset open)*

---

This user exit can be used to:

- Determine whether a job should be printed
- Initialize counters or data fields specific to a single job for use by later user exits
- Increment job related counters
- Alter document information in the XDIB or its extensions to meet specific requirements, such as changing a form name or distribution keyword
- Select the processing mode for a data stream

### *When called*

---

This user exit is called each time the first copy of a SPOOL dataset is presented to XOSF by the spooling subsystem.

### *Input parameters*

---

For CMA-SPOOL or CA-SPOOL:

Input	Mapped by
CMA-SPOOL or CA-SPOOL file queue element	@FQE
FSS common checkpoint area	IAZCHK
XPAF document information block area	@XDIB
XDIB DJDE extension data	@XDJD
XDIB output data block area	@XODB
FSS job separator page area	IAZJSPA

For JES2:

Input	Mapped by
Address of JES2 job output element	\$JOE
Address of JES2 job control table	\$JCT
Address of JES2 peripheral data definition block	\$PDDB
FSS common checkpoint area	IAZCHK
XPAF document information block data	@XDIB
XDIB DJDE extension data	@XDJD
XDIB output data block data	@XODB
Address of FSS job separator page area	IAZJSPA

For JES3:

Input	Mapped by
Address of JES3 service request list	IATSR
FSS common checkpoint area	IAZCHK
XPAF document information block data	@XDIB
XDIB DJDE extension data	@XDJD
XDIB output data block data	@XODB
Address of FSS job separator page area	IAZJSPA

## Return codes

Value	Meaning
0	Continue.
1–8	Purge the JES dataset.
9–16	Requeue the JES dataset.
17–32	Requeue and hold the JES dataset.
33–4095	Abort the print subtask.
4096+	The address of the modified XDIB and its extensions to be used in place of the XPAF-supplied XDIB and extensions.

## Sample user exits

---

XUXIT02, XUXIT02A, and XUXIT02C are samples of user exit 02.

- |          |   |       |  |    |   |      |   |     |  |     |  |      |   |      |                        |      |                                   |
|----------|---|-------|--|----|---|------|---|-----|--|-----|--|------|---|------|------------------------|------|-----------------------------------|
| XUXIT02  | <p>This user exit performs these functions:</p> <ul style="list-style-type: none"> <li>• Initializes fields in the work area for use by subsequent user exits</li> <li>• Saves the job name, job number, and user ID of the job that created this document</li> <li>• Initializes a line counter</li> </ul>   |       |  |    |   |      |   |     |  |     |  |      |   |      |                        |      |                                   |
| XUXIT02A | <p>This user exit contains the same code as XUXIT02, with additional code to select the processing mode for a data stream. You can use any of the fields available in the XDIB control block to build your test criteria and determine the desired document type. For example, you can test the form name, SYSOUT class, or FCB name to decide if the document should be printed as native mode or AFP.</p> <p>You must then code user exit 02 to update the XDIBDFMT field with the desired type of data stream processing. Valid types of data stream processing include:</p> <table border="0" style="margin-top: 10px;"> <tr> <td style="padding-right: 20px;">blank</td> <td>XPAF determines what processing mode to use based on the extended JCL and the data stream.</td> </tr> <tr> <td>NM</td> <td>Forces the job through native mode processing. No extended JCL processing is provided, and no DJDE processing is provided for decentralized and PCL-capable printers.</td> </tr> <tr> <td>DJDE</td> <td>Forces the job through DJDE processing; no extended JCL processing is provided. NM and DJDE processing are equivalent for centralized printers.</td> </tr> <tr> <td>JCL</td> <td>Forces the job through extended JCL processing. For decentralized printers, DJDE-to-XES processing also is included.</td> </tr> <tr> <td>XES</td> <td>Forces the job through XES processing to decentralized printers.</td> </tr> <tr> <td>PCL5</td> <td>Forces pass-through processing to PCL-capable printers.</td> </tr> <tr> <td>AFPA</td> <td>Forces AFP processing.</td> </tr> <tr> <td>AFPX</td> <td>Forces page-formatted processing.</td> </tr> </table> | blank | XPAF determines what processing mode to use based on the extended JCL and the data stream. | NM | Forces the job through native mode processing. No extended JCL processing is provided, and no DJDE processing is provided for decentralized and PCL-capable printers. | DJDE | Forces the job through DJDE processing; no extended JCL processing is provided. NM and DJDE processing are equivalent for centralized printers. | JCL | Forces the job through extended JCL processing. For decentralized printers, DJDE-to-XES processing also is included. | XES | Forces the job through XES processing to decentralized printers. | PCL5 | Forces pass-through processing to PCL-capable printers. | AFPA | Forces AFP processing. | AFPX | Forces page-formatted processing. |
| blank    | XPAF determines what processing mode to use based on the extended JCL and the data stream.  |       |  |    |   |      |   |     |  |     |  |      |   |      |                        |      |                                   |
| NM       | Forces the job through native mode processing. No extended JCL processing is provided, and no DJDE processing is provided for decentralized and PCL-capable printers.   |       |  |    |   |      |   |     |  |     |  |      |   |      |                        |      |                                   |
| DJDE     | Forces the job through DJDE processing; no extended JCL processing is provided. NM and DJDE processing are equivalent for centralized printers.   |       |  |    |   |      |   |     |  |     |  |      |   |      |                        |      |                                   |
| JCL      | Forces the job through extended JCL processing. For decentralized printers, DJDE-to-XES processing also is included.  |       |  |    |   |      |   |     |  |     |  |      |   |      |                        |      |                                   |
| XES      | Forces the job through XES processing to decentralized printers.  |       |  |    |   |      |   |     |  |     |  |      |   |      |                        |      |                                   |
| PCL5     | Forces pass-through processing to PCL-capable printers.   |       |  |    |   |      |   |     |  |     |  |      |   |      |                        |      |                                   |
| AFPA     | Forces AFP processing.  |       |  |    |   |      |   |     |  |     |  |      |   |      |                        |      |                                   |
| AFPX     | Forces page-formatted processing.   |       |  |    |   |      |   |     |  |     |  |      |   |      |                        |      |                                   |
| XUXIT02C | <p>This user exit contains the same code as XUXIT02. It also shows how to access the CMA-SPOOL or CA-SPOOL \$FQE data. It copies selected \$FQE fields and the programmer name from the IAZJSPA to the XPAF XDIB control block.</p> <p>Since the exit parameter list contains the variable length \$FQE, the corresponding CMA-SPOOL or CA-SPOOL sample offset table, XUXOF02C, must also be assembled and linked into the user exit load library.</p>  |       |  |    |   |      |   |     |  |     |  |      |   |      |                        |      |                                   |

## User exit 03 (JES record)

---

This user exit can be used to:

- Suppress unwanted records
- Add user-generated records
- Change the values in records
- Dynamically limit the size of a dataset to be printed (using a unique identifier such as a time, date, or user ID)

### When called

---

This user exit is called each time a record from the JES dataset is read, before XOSF processes it.

### Input parameters

---

Input	Mapped by
XPAF Document Information Block data	@XDIB
JES index record flag from the JES index table	IAZIDX
Logical print record from JES	n/a

### Return codes

---

Value	Meaning
0	Continue.
1–4	Bypass this record.
5–8	Purge the JES dataset.
9–16	Requeue the JES dataset.
17–32	Requeue and hold the JES dataset.
33–4095	Abort the thread.
4096+	The address of the user-provided record is used in place of the JES-provided record. The next time the user exit is called, the original JES-provided record will again be input to the user exit.

## *Sample user exits*

---

XUXIT03, XUXIT03A, XUXIT03C, and XUXIT03D are samples of user exit 03.

- |          |   |
|----------|---|
| XUXIT03  | This user exit counts spool records and stops printing on decentralized printers after 1,000 lines. It demonstrates a method of inspecting JES input records without changing them and terminating the processing of a single print dataset. If it encounters a dataset with over 1,000 lines, this user exit also issues an error message. |
| XUXIT03A | This user exit contains the same code as XUXIT03, with additional code to insert a user-defined record, then print the JES record. This user exit cannot be used with AFP data streams.   |
| XUXIT03C | This user exit contains the same code as XUXIT03, with additional code to replace the JES record with a user-defined record. This user exit can be used only with datasets that include carriage control.   |
| XUXIT03D | This user exit contains the same code as XUXIT03, with additional code to delete the JES record before XOSF processes it. This user exit cannot be used with AFP data streams.  |

## *User exit 04 (XOSF dataset open)*

---

This user exit can be used to dynamically alter printer attributes, such as XJCF processing mode or download options. This processing may be based on criteria such as a time, date, or user ID.

### *When called*

---

This user exit is called when a dataset is retrieved for output and the XOSF processors are being initialized for the dataset.

### *Input parameters*

---

Input	Mapped by
XPAF Printer Profile Table (also known as XPAF point product table)	@XXQPPT

### *Return codes*

---

Value	Meaning
0	Continue.
1–4095	Abort the thread.
4096+	The address of the modified printer profile table to be used in place of the XPAF-provided printer profile table.

### *Sample user exit*

---

XUXIT04 is a sample user exit 04. It saves the printer device type for use by subsequent user exits. Since the device type will not change, the bit corresponding to this user exit in the active user exit bit mask is turned off to prevent subsequent calls to this user exit.

## User exit 05 (Banner page)

---

This user exit can be used to:

- Create custom banner pages
- Dynamically suppress banner pages
- Add DJDEs or XESs before a dataset
- Distribute information, much like JES2 news

Standard banner pages for AFP documents use the C1D0GT15 character set and T1D0BASE code page by default. For instructions on changing these defaults, refer to [“Specifying separator print attributes”](#) later in this chapter.

You cannot print banner pages in a portrait orientation in an AFP environment.

For more information on banner page processing, refer to chapter 6, [“Setting up system-level features.”](#)

### When called

---

This user exit is called immediately before the first line and after the last line of a JES dataset is processed by XOSF, before the default XOSF banner routine is called.

The user exit is called only if a JES printer definition or operator command has been issued to enable the type of banner pages this user exit uses: header, trailer, and/or dataset.

For any JES2 version, you can override the job separator specification by including SEPPAGE=NONE in the PRINTDEF statement.

For more information on banner page processing, refer to chapter 6, [“Setting up system-level features.”](#) For other information on how JES handles banner pages, refer to your JES initialization and tuning manuals.

## Input parameters

---

For JES2:

Input	Mapped by
Address of XPAF print routine	n/a
Address of XPAF block letter routine	n/a
Address of JES Job Output Element	\$JOE
Address of JES Job Control Table	\$JCT
XPAF separator exit parameters	@XJOBPRM
XPAF Point Product Table data	@XXQPPT
Address of JES Job Separator Page Area	IAZJSPA
XPAF Document Information Block data	@XDIB
XDIB DJDE extension data	@XDJD
XDIB Output Data Block data	@XODB
JES News Data	@XNEWS

For JES3:

Input	Mapped by
Address of XPAF print routine	n/a
Address of XPAF block letter routine	n/a
Address of JES Service Request List	IATSRL
XPAF separator exit parameters	@XJOBPRM
XPAF Point Product Table data	@XXQPPT
Address of JES job separator page area	IAZJSPA
XPAF Document Information Block data	@XDIB
XDIB DJDE extension data	@XDJD
XDIB Output Data Block data	@XODB
JES News Data	@XNEWS

## Return codes

---

Value	Meaning
0	Continue. XPAF will produce the default banner page either in place of or in addition to any user-created banner.
1+	Bypass the XPAF default banner. The user has created a banner or does not want a banner.

## Specifying separator print attributes

---

This section explains how to specify separator print attributes for banner pages.

### DJDE documents

---

When printing DJDE documents on centralized printers, you can use DJDEs to specify the print attributes for the banner page; however, resource conditioning is not performed for the banner page. For example, if you specify the DJDE FONT=RK1ABP and that font is not loaded on the printer, XOSF will not download it for you.

When printing DJDE documents on decentralized printers, you cannot use DJDEs to specify print attributes for a banner page. If you attempt to do this, the DJDEs are printed as data. For more information, refer to [“Decentralized printers”](#) later in this chapter.

### AFP and page-formatted documents

---

You cannot use DJDEs to specify print attributes for a banner page for an AFP or page-formatted job. If you attempt to do this, the DJDEs are printed as data. However, you can specify these print attributes for an AFP or page-formatted banner as shown at label ASUREC in XUXIT05B:

- Use overlay for banner
- Paper size (width, length)
- Print orientation
- Margins (left, top)
- Font selection (character set, code page, or coded font)
- Line spacing

### Decentralized printers

---

All non-AFP and non-page-formatted documents printed on decentralized printers have banner pages formatted with XES commands. You may specify XES commands in user exit 05 to customize the format of these decentralized banner pages.

## Calling support routines

---

XPAF provides these macros to call XPAF or IBM routines within user exit 05:

- #UXITBLK
- #UXITPRT
- SJFREQ

### #UXITBLK

---

Use the #UXITBLK macro to call the XPAF block letter routine. The block letter routine generates 12 lines, each 124 bytes in length, containing block letters generated from an input string. The input string can be from 1 to 9 bytes long.

To reserve the parameter list and work area that XPAF needs for the block letter routine, you must specify

#UXITBLK MF=R

in your work area. You also must specify a label on the MF=R format of the macro.

To call the routine, specify

#UXITBLK MF=(E,*label*),TEXT=x[,LENGTH=*l*]

where

*label* The label specified on the MF=R format.

*x* The name of a 1- to 9-character field or register specification (*Rn*) of the field to be converted.

*l* The length of the field to be converted and can be:

- An equated length
- An expression
- A decimal digit
- A register specification (*Rn*), where the length value has been previously loaded into the register specified

*l* is optional. If you omit it, the assembler length attribute of *x* is used. If register notation is used for *x*, *l* must be specified.

The parameter list generated by the MF=R form of the #UXITBLK macro is as follows:

#XITBLPL	DS	OF	Banner print routine parm list
#XITAD	DS		Address text to be printed
#XITL	DS		Length of text to be printed
#XITBAD	DC		Block letter line address
#XITBLN	DC		Length block letter address area
#XITBNO	EQU		&NUMLINENumber of block lines
#XITBLK	DS		(#XITBNO)CL124Block letter lines

XPAF places the block letter lines in the field #XITBLK when called by the MF=E form of the #UXITBLK macro. The lines can be printed subsequently using the #UXITPRT macro.

## #UXITPRT

Use the #UXITPRT macro to call the XPAF print routine. Through the print routine, the 133 bytes that you point to are written to the printer. The first character of this print line is the machine code carriage control character.

To reserve the parameter list and work area that XPAF needs for the print routine, you must specify

**#UXITPRT MF=R**

in your work area. You must also specify a label on the MF=R format of the macro.

To call the routine, specify

**#UXITPRT MF=(E,label ),LINE=xxx**

where

*label* The label specified on the MF=R format.

*xxx* The label of the 133 byte field to be printed. The LINE value may also be a register specification (Rn).

For this XPAF routine, the address of the XPAF subtask control block must be passed as an input parameter. This value is passed to UXITSTCB in the user exit common information area. To ensure that #UXITPRT has addressability to the XPAF subtask control block, you must use the @UXIN macro to map the XPAF common information area.

The parameter list generated by the MF=R form of the #UXITPRT macro is as follows:

#XITPRPLDSOF	Banner print routine parm list
#XITSTCBDSA	Address subtask control block
#XITLADDSA	Address line to be printed

## SJFREQ

Use the SJFREQ macro to call the IBM routine used to retrieve information for XPAF banner pages that was originally coded on the IBM OUTPUT JCL statement.

To call the routine, specify

**SJFREQ REQUEST=RETRIEVE**

The REQUEST command must reference the XDIB output token field (XDIBOUTK) as a parameter. This parameter retrieves the keyword values from the IBM OUTPUT JCL statements. The statements may include the ADDRESS, BUILDING, DEPT, NAME, ROOM, and TITLE keywords to be printed on banner pages.

For more information on the SJFREQ routine, refer to the *MVS/ESA Application Development Reference: Services for Authorized Assembler Language Programs*.

## Sample user exits

---

XUXIT05, XUXIT05A, and XUXIT05B are samples of user exit 05.

- |          |  |
|----------|--|
| XUXIT05  | This user exit generates a job header, but no trailer or dataset separator pages. The header contains the room number and programmer's name in block letters. At the bottom of the page, it prints JES-specific information from either JES2 or JES3 control blocks. This user exit provides examples of accessing all of the input control blocks (XPAF, MVS, JES common, JES2, and JES3), as well as information passed from other user exits. |
| XUXIT05A | This user exit is an example of a banner page that uses a form and honors DJDEs. It generates a header for copy one and a trailer after the last copy of a dataset. It does not print dataset banners and cannot be used for AFP documents, decentralized printers, or PCL-capable printers.   |
| XUXIT05B | This user exit generates a banner page in the same format as the default banner page supplied with XPAF.   |



**NOTE:** The banner pages for decentralized and centralized printers use different formats. To print a banner page on a decentralized or PCL-capable printer in the same format as a banner page printed on a centralized printer, follow the instructions included at the beginning of this sample.

---

- |          |   |
|----------|---|
| XUXIT05C | This user exit generates a banner page that displays updated Job Separator Page Area (JSPA) user data fields. |
|----------|---|

## User exit 06 (Resource security)

---

This user exit can be used to:

- Ensure that a resource being accessed is authorized for a particular user ID
- Restrict resource downloads to noncritical times

### When called

---

This user exit is called when a printer or AFP resource is referenced. This user exit also is called when a printer resource (that is, font, form, image) is downloaded.



**NOTE:** For overlays and page segments that have already been converted and stored in a native mode library, a call will be made only for the native mode object.

---

### Input parameters

---

- Member name
- Resource type
- Library format
- Library reference method
- Library DD name
- Library dataset name
- Name of load module from which user exit is being called
- Access type

### Return codes

---

Value	Meaning
0	Continue.
1–4	Bypass the resource download.
5–4095	Fail the resource access and abort the print job.
4096+	The address of the modified resource name to be used in place of the XPAF-provided resource name (valid for download only).

### Sample user exit

---

XUXIT06 is a sample user exit 06. It issues a RACF RACHECK to determine whether the user who submitted the job is authorized to read the resource. If the user is authorized, the resource is read. If the RACHECK fails, printing is terminated, and an error message is issued.

## *User exit 07 (Begin resource download)*

---

This user exit can be used to:

- Issue an enqueue on a dataset name being downloaded
- Issue an enqueue on a member name being downloaded

### *When called*

---

This user exit is called immediately before a resource is downloaded.

### *Input parameters*

---

- Member name
- Resource type
- Library format
- Library reference method
- Library DD name
- Library dataset name
- Name of load module from which user exit is being called

### *Return codes*

---

Value	Meaning
0	Continue.
1–4	Bypass the resource access.
5+	Bypass the resource access and purge the JES dataset.

### *Sample user exit*

---

XUXIT07 is a sample user exit 07. It issues an enqueue for the resource library and member being downloaded.

## *User exit 08 (End resource download)*

---

This user exit can be used to issue a dequeue for a resource enqueued in user exit 07.

### *When called*

---

This user exit is called immediately after a resource is downloaded.

### *Input parameters*

---

- Member name
- Resource type
- Library format
- Library reference method
- Library DD name
- Library dataset name
- Name of load module from which user exit is being called
- Return code from resource download

### *Return codes*

---

Value	Meaning
0+	Continue.

### *Sample user exit*

---

XUXIT08 is a sample user exit 08. It issues a dequeue for the resource library and member being downloaded.

## User exit 09 (SMF record)

---

This user exit can be used to:

- Consolidate SMF records
- Add user-generated fields as SMF record extension fields
- Adjust fields generated by XPAF
- Select printers, jobs, or users to be accounted for
- Change the SMF record type to a user-defined value
- Collect and save accumulated JES dataset statistics

### When called

---

This user exit is called immediately before the SMF type-6 record is written (after printing of a dataset has completed).

### Input parameters

---

- Standard type 6 SMF record (PSF subtype)

### Return codes

---

Value	Meaning
0	Continue.
1–4095	Bypass writing the SMF record.
4096+	The address of the user-provided SMF record is used in place of the XPAF-generated SMF record.

### Sample user exit

---

XUXIT09 is a sample user exit 09. It copies the XPAF requestor ID to the SMF user ID field and indicates that this modified SMF record will be written in place of the XPAF-generated record.

## *User exit 10 (FSA termination)*

---

This user exit can be used to:

- Issue a termination message
- Collect and save accumulated subtask-related statistics

### *When called*

---

This user exit is called immediately before a task is terminated.

### *Input parameters*

---

None.

### *Return codes*

---

Value	Meaning
0+	Continue.

### *Sample user exit*

---

XUXIT10 is a sample user exit 10. It issues a message with the elapsed time XPAF was active.

## User exit 11 (XOSF dataset close)

---

This exit can be used to:

- Issue a dataset close message
- Collect or save accumulated dataset statistics

### When called

---

This user exit is called after the last record in a dataset has been processed just before the dataset is logically closed.

### Input parameters

---

Input	Mapped by
XPAF Document Information Block	@XDIB

### Return codes

---

Value	Meaning
Any	Continue

### Sample user exits

---

XUXIT11 is a sample user exit 11. This sample exit will generate a message showing JOBNAME, JOBNUMBER, FCB, FORMS, SYSOUT CLASS and the count of records sent to the printer (accumulated by sample exit XUXIT12).

## User exit 12 (Writer data record)

---

This exit can be used to:

- Modify data records before they are sent to printer
- Insert data records in printer data stream
- Delete data records from printer data stream

### When called

---

This user exit is called for each record presented to the physical writer (XWRMAIN), before the record is transmitted to the printer. Note that this exit is before any VTAM or TCP/IP conditioning has been done and the records will not include any records generated by the VTAM or TCP/IP conditioning.

### Input parameters

---

Input	Mapped by
XPAF Document Information Block	@XDIB
XPAF printer profile table	@XXQPPT
Flags indicating type of carriage control used	@UXPM
Logical print record from XOSF transform and conditioning	@UXPM

### Return codes

---

Value	Meaning
0	Continue
1-4	Bypass this record
5-16	Requeue the JES dataset
17-32	Requeue and hold the JES dataset
33-4095	Abort the thread
4096+	The address of the user-provided record is used in place of the provided record. The next time the user exit is called, the original provided record will again be presented to the user exit.

### Sample user exits

---

XUXIT12 is a sample user exit 12. This sample exit will add a DJDE SIDE=NUFRONT in front of each DJDE dataset and will count the number of records sent to the printer.

## User exit 30 (Messages)

---

This user exit can be used to:

- Extract statistics from messages or information from other user exits in the task
- Control message suppression dynamically
- Translate console messages to meet user requirements via WTO

### When called

---

For all messages issued from the Message Service Facility except MSF and XUX messages, this user exit is called before a message is issued.

### Input parameters

---

- Message flag.
- Message text with all MSF substitutions resolved. The length is determined from the parm length field.

### Return codes

---

Value	Meaning
0	Continue.
1+	Bypass message processing for this message.

### Sample user exit

---

XUXIT30 is a sample user exit 30. It suppresses all informational XPAF console messages.

## User exit 31 (Commands)

---

This user exit can be used to:

- Restrict commands to certain users or time periods
- Suppress commands

### When called

---

This user exit is called before a command is parsed. At this point in processing, syntax checking has not been performed; therefore, the command may not be valid.

### Input parameters

---

- Command text. The length is determined from the parm length field.

### Return codes

---

Value	Meaning
0	Continue.
1+	Bypass command processing for this command.

### Sample user exit

---

XUXIT31 is a sample user exit 31. It suppresses operator commands to turn off SMF or XOSF logging, issues a message when a command is suppressed, and maintains a counter of suppressed messages.

## User exit 32 (Refresh security)

---

This user exit can be used to:

- Restrict access to the PDS refresh function to selected groups or individuals
- Restrict access to refresh functions during periods of high usage
- Dynamically alter the data controlling access defined by the user exit itself

The PDS refresh function can be accessed in two ways:

- In XOAF, using the PDS refresh and display services.
- In XOSF, using these XPAF-exclusive operator commands:

```
REFRESH ALLPDS
REFRESH FONT240
REFRESH FONT300
REFRESH FORMDEF
REFRESH OVERLAY
REFRESH PAGEDEF
REFRESH PAGESEG
REFRESH PAGEFORM
DISPLAY REFRESH STATS
RESET THRESHOLD
SET REFRESH SECURITY ON
SET REFRESH SECURITY OFF
SET REFRESH SECURITY 'user-text'
```

### When called

---

This user exit is called before a refresh request from the MVS operator or TSO user is executed.

### Input parameters

---

- Address of XOSF function table
- Function key to use with the XOSF function table
- Command value
- XOSF function table

### Return codes

---

Value	Meaning
0	Continue.
1+	Bypass refresh processing for this refresh request.

### Sample user exit

---

XUXIT32 is a sample user exit 32. It suppresses TSO-initiated refresh requests during typical morning and afternoon peak processing hours. It also demonstrates a method of accessing the XOSF function table.

## XPAF, PSF, and JES user exit cross-reference

Table 7-3 identifies the XPAF user exits by user exit ID and function and lists the corresponding PSF and JES user exits, where applicable.

Table 7-3. XPAF, PSF, and JES user exit cross-reference

XPAF user exits		PSF user exits		JES user exits		
ID	Function	ID	Function	Ver.	ID	Function
01	FSA initialization	7.a	FSA initialization			
02	Dataset open	7.b	Begin dataset			
03	Read JES logical record	4.a	JES record line fields			
		4.b	JES record structured fields			
04	XOAF dataset open					
05	Banner pages	1	Job header separator	2	1	Print/Punch separators
		2	Job trailer separator	3	20	Job output job header
		3	Job dataset separator	3	21	Dataset job header
				3	23	Job output job trailer
06	Resource access	7.c	Resource access			
07	Begin resource download	7.d.1	Resource load: before load			
08	End resource download	7.d.2	Resource load: after load			
		7.e	Resource delete			
09	Write SMF record	5	SMF record	2	21	SMF record
10	FSA termination	7.f	FSA termination			
11	XOSF dataset close					
12	Writer data option					
30	Messages					
31	Commands					
32	Security					

## 8. *Message logging*

---

This chapter describes the logs used by XPAF and explains how to set up logging functions. It also explains how to print the XOAF and XOSF log datasets using JCL.

For more information about any of the initialization or printer profile parameters mentioned in the following sections, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

### *MVS system logging*

---

The MVS system log (SYSLOG) may contain MVS system messages, XOAF messages, XOSF messages, and messages from other host products. For example, messages in the SYSLOG may show the status of jobs running on the host system, actions taken by users, or information about XPAF processing.

### *Setting system logging*

---

The XPAF default is to write all XPAF system messages along with other system messages to the MVS system log. However, you may want to avoid logging duplicate entries in both the MVS system log and the XOAF or XOSF log.

If you do not want XPAF system messages written to the MVS system log, you can turn system logging off:

- For XOAF, specify **SLOG=N** in the XINSXOAF member of XINPARM.
- For XOSF, specify **SLOG=N** in one of these locations:
  - The XINSXOSF member of XINPARM.
  - The PARM parameter on the EXEC statement included in the XOSF start-up proc.

You also can use the SET SYSTEM LOGGING ON|OFF command to change the current status of XOSF message logging. For more information about this operator command, refer to [Section Seven: XPAF Operator Guide](#).

## Suppressing messages

---

XPAF messages, except those coded as non-suppressible, can either be enabled to or suppressed from displaying on the console.

To suppress XPAF system messages directed to the SYSLOG and MVS operator console, you must specify a member name in the MSFSUPPMEM initialization parameter in the XINSXOAF and XINSXOSF members of XINPARM. The member name identifies which member contains the suppression text (message number/message type) used to suppress message numbers or message types at start-up time. All XPAF system messages will continue to be written to the XOAF and/or XOSF log.

A sample message suppression member, MSGSUPP, is included in XPFSAMP. You can use this sample text as a pattern for creating your own message suppression member.

You also can use the SUPPRESS or ENABLE commands to suppress or enable XOSF messages. For more information about these operator commands, refer to [Section Seven: XPAF Operator Guide](#).

## Setting a message threshold

---

You may set a maximum number of messages that can be displayed on the operator console and written to the SYSLOG while printing a document. To do this, specify the MSGTHMAX parameter in the XINSXOSF member of XINPARM. This option is only available for XOSF messages; it does not apply to XOAF messages.

When the maximum threshold value is reached, XOSF issues a message to the SYSLOG and the XOSF log. All messages issued after this value is reached are written only to the XOSF log.

## XPAF system logging

---

XPAF system messages can be written to either the XOAF log dataset or the XOSF log dataset.

### Managing the XOAF log

---

XOAF logging is similar to MVS system logging. The difference is that only XOAF messages are written to the XOAF log. If you have specified SLOG=Y in the XINSXOAF member of XINPARM to enable both system logging and XOAF logging, the system writes messages to both the XOAF log and the operating system log.

### Creating an XOAF log

---

During installation, XPAF allocates an XOAF log dataset called *prefix.XOAFLOG*, where *prefix* is the value specified for the HLQ (high-level qualifier) parameter in the #GENPROD installation service macro. You can use this installation-generated dataset to log messages, or you can specify a different sequential dataset for logging messages.



**CAUTION:** If you have multiple XOAF users, each XOAF session should have a unique XOAF log dataset. Sharing an XOAF log dataset between multiple users may result in data being overwritten or lost, or in messages for different users being intermingled.

---

You must allocate each XOAF log dataset as a sequential dataset with these file specifications:

```
RECFM=VB
LRECL=256
BLKSIZE=4096
```

### Setting XOAF logging on

---

If you want all XPAF system messages written to the XOAF log, follow these steps:

- Step 1.** Specify **XLOG=Y** in the XINSXOAF member of XINPARM.
- Step 2.** Specify a dataset name for the XLOGDSN initialization parameter in the XINSXOAF member of XINPARM. There is no default dataset; XPAF cannot set logging on unless you specify a dataset name for this parameter.
- Step 3.** After you log on to TSO, enter these commands:
 

```
TSO FREE DDN(XINPARM)
TSO ALLOC DDN(XINPARM)
DSN('prefix.xinparm-library-name') SHR
```

## Switching XOAF log datasets

---

You may define a primary XOAF log dataset via the XLOGDSN initialization parameter. When this primary dataset becomes full, you must clear the file contents. While you clear the primary log, messages will be sent to the alternate XOAF log dataset, as defined by the ALOGDSN initialization parameter. You must have both a primary and an alternate log dataset defined for log switching to work properly.

To enable XPAF to switch between primary and alternate log datasets automatically, follow these steps:

- Step 1.** Allocate an alternate dataset with the same attributes as the primary dataset. The alternate dataset must be empty or contain only one record before it is switched to. This requirement prevents you from switching to a dataset that has not been archived or cleared.
- If the alternate log is not empty, a message is issued, and XOAF logging is disabled. You must clear the alternate log before it can be used.
- Step 2.** Specify the ALOGDSN initialization parameter and the name of the alternate log dataset in the XINSXOAF member of XINPARM.
- When the switch occurs, XOAF issues an informational message notifying you of the change in log datasets.
- Step 3.** Before logging is switched back to the primary dataset, clear the primary log dataset. For more information, refer to [“Clearing the XOAF log dataset”](#) later in this chapter.

## Setting intensive logging

---

As a diagnostic aid, you can turn the intensive logging indicator on or off.

- When the indicator is turned on, the system writes debugging messages or additional informational messages to the XOAF log. Therefore, you should turn on intensive logging when diagnosing a problem.
- When the indicator is turned off, the system does not write additional messages to the XOAF log.

To ensure that the intensive logging indicator is turned on before an XOAF session is initiated, verify that DEFILIND=Y has been specified in the XINSXOAF member of XINPARM.

## Recovering an XOAF log dataset after an I/O error

---

To allow you to browse the XOAF log dataset while XOAF is still active, XPAF allocates the log dataset with a disposition of SHARE. This means that a program (for example, IEBGENER or a user-written program) in another address space may be able to update the same log dataset as XPAF, causing the currently active log dataset to become corrupted.

If this happens, XPAF issues a message indicating that an I/O error has occurred. Logging is disabled.

This error may occur when you are using the ISPF editor or when you are redefining the log dataset. Use one of these two options to recover the XOAF log dataset in which the error occurred.

### Option 1: Using the ISPF editor

If you are using the ISPF editor, follow these steps:

- Step 1.** Edit the named log dataset and add one character to the first line.
- Step 2.** Save the dataset.
- Step 3.** Reedit the dataset and delete the first record.
- Step 4.** Save the dataset again.

### Option 2: Redefining the log dataset

If you are redefining the log dataset, perform either of these options:

- Run a batch job using IEBGENER to delete and define the named log dataset.
- Use ISPF option 3.2 to delete and define the named log dataset.

### Clearing the XOAF log dataset

If XPAF issues messages indicating that the XOAF log dataset is full, you must clear the dataset. If you want to keep a record of the messages, print or archive the dataset before clearing it.

To clear the dataset, follow these steps:

- Step 1.** If the XOAF log is allocated to an XOAF session, terminate the session before performing the next step.
- Step 2.** Either edit the dataset and delete all of the lines from it, or delete and uncatalog the dataset and then reallocate a new one with the same name.



**CAUTION:** Failure to perform these steps can cause a permanent I/O error in the log dataset.

### Managing the XOSF log

XOSF logging is similar to MVS system logging. The difference is that only XOSF messages are written to the XOSF log. If you have enabled both system logging and XOSF logging and specified SLOG=Y in the XINSXOSF member of XINPARM, the system writes messages to both the XOSF log and the operating system log.

## Creating an XOSF log

---

During installation, XPAF allocates an XOSF log dataset called *prefix.XOSFLOG*, where *prefix* is the value you specified for the HLQ (high-level qualifier) parameter in the #GENPROD installation service macro. You can use this installation-generated dataset to log messages, or you can specify a different sequential dataset for logging messages.

If you have multiple XOSF started tasks, each XOSF address space should have a unique XLOGDSN.



**CAUTION:** Sharing an XLOGDSN between multiple XOSF printer address spaces may result in data being overwritten or lost.

---

You must allocate each XOSF log dataset as a sequential dataset with these file specifications:

```
RECFM=VB
LRECL=256
BLKSIZE=4096
```

## Setting XOSF logging on

---

If you want all XOSF messages to be written to the XOSF log, follow these steps:

- Step 1.** Specify **XLOG=Y** in one of these locations:
- The XINSXOSF member of XINPARM
  - The PARM parameter on the EXEC statement included in the XOSF start-up proc
  - The dataset specified by the PFILE initialization parameter
- Step 2.** Specify a dataset name for the XLOGDSN initialization parameter in the XINSXOSF member of XINPARM. There is no default dataset; XPAF cannot set logging on unless you specify a dataset name for this parameter.
- Step 3.** Issue the start printer JES command to start your XOSF session and activate the parameter settings.

After XOSF has been initialized, use the SET XOSF LOGGING ON|OFF command to turn XOSF logging on or off. For more information about this operator command, refer to [Section Seven: XPAF Operator Guide](#).

## Switching XOSF log datasets

---

You may define a primary XOSF log dataset via the XLOGDSN initialization parameter. When this primary dataset becomes full, you must clear the file contents. To continue logging messages while clearing the file, activate log switching. While you clear the primary log, messages will be sent to the alternate XOSF log dataset, as defined by the ALOGDSN initialization parameter. You must have both a primary and an alternate log dataset defined for log switching to work properly.

To switch between primary and alternate log datasets automatically, follow these steps:

**Step 1.** Allocate the alternate dataset with the same attributes as the primary dataset. The alternate dataset must be empty or contain only one record before it is switched to. This requirement prevents you from switching to a dataset that has not been archived or cleared.

If the alternate log is not empty, a message is issued, and XOSF logging is disabled. You must clear the log, then reactivate it by issuing the SET XOSF LOG ON command.

**Step 2.** Add the ALOGDSN initialization parameter and the name of the alternate log dataset to one of these locations:

- The XINSXOSF member of XINPARM
- The PARM parameter on the EXEC statement included in the XOSF start-up proc
- The dataset specified by the PFILE initialization parameter

When the switch occurs, XOSF issues an informational message notifying you of the change in log datasets.

**Step 3.** Before logging is switched back to the primary dataset, clear the primary log dataset. For more information, refer to [“Clearing the XOSF log dataset”](#) later in this chapter.

You can also manually switch between datasets using the SWITCH XLOG command. For more information about this operator command, refer to [Section Seven: XPAF Operator Guide](#).

## Setting intensive logging

---

As a diagnostic aid, you can turn the intensive logging indicator on or off:

- When the indicator is turned on, debugging messages or additional information messages are written to the XOSF log. Therefore, you should turn on intensive logging when diagnosing a problem.
- When the indicator is turned off, additional messages are not written to the XOSF log.

To ensure that the intensive logging indicator is turned on before XOSF is started, verify that DEFILIND=Y has been specified in the XINSXOSF member of XINPARM.

To turn intensive logging on at the operator console, use the SET INTENSIVE LOGGING ON command. For more information about this operator command, refer to [Section Seven: XPAF Operator Guide](#).

## *Recovering an XOSF log dataset after an I/O error*

---

To allow you to browse the XOSF log dataset while XOSF is still active, XPAF allocates the log dataset with a disposition of SHARE. This means that a program (for example, IEBGENER or a user-written program) in another address space may be able to update the same log dataset as XPAF, causing the currently active log dataset to become corrupted.

If this happens, XPAF issues a message indicating that an I/O error has occurred. Logging is disabled.

This error may occur when you are using the ISPF editor or when you are redefining the log dataset. Use one of these two options to recover the XOSF log dataset in which the error occurred.

### *Option 1: Using the ISPF editor*

---

If you are using the ISPF editor, follow these steps:

- Step 1.** Edit the named log dataset and add one character to the first line.
- Step 2.** Save the dataset.
- Step 3.** Reedit the dataset and delete the first record.
- Step 4.** Save the dataset again.
- Step 5.** Issue the SET XOSF LOG ON command.

### *Option 2: Redefining the log dataset*

---

If you are redefining the log dataset, perform either of these options:

- Run a batch job using IEBGENER to delete and define the named log dataset.
- Use ISPF option 3.2 to delete and define the named log dataset.

## Clearing the XOSF log dataset

---

If XPAF issues messages indicating that the XOSF log dataset is full, you must clear the dataset. If you want to keep a record of the messages, print or archive the dataset before clearing it.

To clear the dataset, follow these steps:

- Step 1.** If XOSF is active and the log to be cleared is the currently active log, you must disable it by issuing the SET XOSF LOG OFF command. Or, if the alternate log is empty, switch the logs.
- Step 2.** Either edit the dataset and delete all of the lines from it, or delete and uncatalog the dataset and then reallocate a new one with the same name.
- Step 3.** Issue the SET XOSF LOG ON command.




---

**CAUTION:** Failure to perform these steps can cause a permanent I/O error in the log dataset.

---

## Printing document-related messages

---

To print the messages that XOSF issued while processing a document, specify the PRINTMSG parameter in the XINSXOSF member of XINPARM. If you elect to print the messages, they are printed following the last page of the document and before the trailer page. You can print all messages, no messages, or selected message types.

If you elect to print the messages, you must also specify the MSGFEED parameter in XINSXOSF to identify the tray from which paper is fed when printing the messages.

For a specific printer, you can override these settings using the PRINTMSG and MSGFEED printer profile parameters.

## Printing the log datasets

---

You can use the IEBGENER program to print messages written to the XOAF and XOSF log datasets. This program prints messages in this format:

yyddd hhmmss issued-by message-text

where

<i>yyddd</i>	The julian date of the message.
<i>hhmmss</i>	The hour, minute, and second when the message was issued.
<i>issued-by</i>	Either the name of the printer task that issued the message or the name of the address space. If there is no entry for this parameter, then XPAF system components issued the message.
<i>message-text</i>	The text of the message. If the message is 110 characters, it wraps to the next line.

## 9. *Setting up multiple CPUs*

---

If you plan to submit jobs that contain XPAF extended JCL keywords from a remote CPU to a host CPU, you must install the XPAF extended JCL on both the host and remote systems. This chapter explains how to set up one or more remote CPUs for printing to the host.



---

**NOTE:** If your data streams do not include XPAF extended JCL, this procedure is not required. You can submit jobs directly from the remote CPU to the host CPU by specifying a printer that is attached to the host CPU.

---

### *Checklist for setting up multiple CPUs*

---

As you complete each step, enter a check in the Completed column to track and record your progress. Each step is explained later in this chapter.

Step	Action	Completed
1	Copy files to tape from host CPU	
	A Copy XFSJCL from XPFLOAD	
	B Copy XESJDT00 from XPFLPA	
	C Copy XJCLPROC from PROCLIB	
2	Offload files from tape to remote CPU	
	A Copy XFSJCL to a LNKLIST library	
	B Copy XESJDT00 to a system LPALIB	
	C Copy XJCLPROC to a system PROCLIB	
3	Install the extended JCL keywords on the remote CPU	
4	Submit the print job	

## Step 1 – Copy files to tape from host CPU

---

After XPAF is installed on your host system, use the sample IEBCOPY jobs shown below to copy the specified members to tape.

### Step 1A – Copy XFSJCL from XPFLoad

---

From the XPFLoad library on the host system, copy the XFSJCL member to a tape.

```
//COPYXJCL EXEC PGM=IEBCOPY
//SYSPRINT DD SYSPRINT=*
//SYSUT1 DD UNIT=SYSDA, SPACE=(CYL, 3)
//SYSUT2 DD UNIT=SYSDA, SPACE=(CYL, 3)
//I NDD DD DISP=SHR, DSN=prefix. XPFLoad
//OUTDD DD DISP=(, PASS, DELETE), DSN=prefix. XPFLoad. OUT,
// UNIT=3480, VOL=SER=vol ser, LABEL=(n, SL, EXPDT=98000)
//SYSIN DD *
COPY OUTDD=OUTDD, I NDD=I NDD
SELECT MEMBER=XFSJCL
/*
```

### Step 1B – Copy XESJDT00 from XPFLPA

---

From the XPFLPA library on the host system, copy the XESJDT00 member to a tape.

```
//COPYJDTS EXEC PGM=IEBCOPY
//SYSPRINT DD SYSPRINT=*
//SYSUT1 DD UNIT=SYSDA, SPACE=(CYL, 3)
//SYSUT2 DD UNIT=SYSDA, SPACE=(CYL, 3)
//I NDD DD DISP=SHR, DSN=prefix. XPFLPA
//OUTDD DD DISP=(, PASS, DELETE), DSN=prefix. XPFLPA. OUT,
// UNIT=3480, VOL=SER=vol ser, LABEL=(n, SL, EXPDT=98000)
//SYSIN DD *
COPY OUTDD=OUTDD, I NDD=I NDD
SELECT MEMBER=XESJDT00
/*
```

## Step 1C – Copy XJCLPROC from PROCLIB

---

From the PROCLIB library on your host system, copy the XJCLPROC member to a tape.

```
//COPYJDTS EXEC PGM=IEBCOPY
//SYSPRINT DD SYSPRINT=*
//SYSUT1 DD UNIT=SYSDA, SPACE=(CYL, 3)
//SYSUT2 DD UNIT=SYSDA, SPACE=(CYL, 3)
//I NDD DD DISP=SHR, DSN=prefix. PROCLIB
//OUTDD DD DISP=(, PASS, DELETE), DSN=prefix. PROCLIB. OUT,
// UNIT=3480, VOL=SER=vol ser, LABEL=(n, SL, EXPDT=98000)
//SYSIN DD *
COPY OUTDD=OUTDD, I NDD=I NDD
SELECT MEMBER=XJCLPROC
/*
```

## Step 2 – Offload files from tape to remote CPU

---

At the remote site, offload the files from the tape to the remote CPU. Use the sample IEBCOPY jobs to copy the specified members from tape to the remote CPU.

### Step 2A – Copy XFSJCL to a LNKLIST library

---

Copy the XFSJCL member into a LNKLIST library or to an authorized library that will be used as a STEPLIB in the XFSJCL procedure.

```
//UNLOAD1 EXEC PGM=IEBCOPY
//SYSPRINT DD SYSPRINT=*
//SYSUT1 DD UNIT=SYSDA, SPACE=(CYL, 3)
//SYSUT2 DD UNIT=SYSDA, SPACE=(CYL, 3)
//I NDD DD DISP=(, PASS, DELETE), DSN=prefix. XPFLD. OUT,
// UNIT=3480, VOL=SER=vol ser, LABEL=(n, SL, EXPDT=98000)
//OUTDD DD DISP=SHR, DSN=prefix. lnklist-library-name
//SYSIN DD *
COPY OUTDD=OUTDD, I NDD=I NDD
/*
```

## Step 2B – Copy XESJDT00 to a system LPALIB

---

Copy the XESJDT00 member into a library that is specified in one of the LPA lists (IEAFIXxx, IEALPAXx, or LPALSTxx) in *prefix.PARMLIB*:

```
//UNLOAD2 EXEC PGM=IEBCOPY
//SYSPRINT DD SYSPRINT=*
//SYSUT1 DD UNIT=SYSDA, SPACE=(CYL, 3)
//SYSUT2 DD UNIT=SYSDA, SPACE=(CYL, 3)
//I NDD DD DISP=(, PASS, DELETE), DSN=prefix. XPFLPA. OUT,
// UNIT=3480, VOL=SER=vol ser, LABEL=(n, SL, EXPDT=98000)
//OUTDD DD DISP=SHR, DSN=prefix. lpa-library-name
//SYSIN DD *
COPY OUTDD=OUTDD, I NDD=I NDD
/*
```

## Step 2C – Copy XJCLPROC to a system PROCLIB

---

Copy the XJCLPROC member to a system PROCLIB. You can use either the name XJCLPROC or your own procedure name.

```
//UNLOAD1 EXEC PGM=IEBCOPY
//SYSPRINT DD SYSPRINT=*
//SYSUT1 DD UNIT=SYSDA, SPACE=(CYL, 3)
//SYSUT2 DD UNIT=SYSDA, SPACE=(CYL, 3)
//I NDD DD DISP=(, PASS, DELETE), DSN=prefix. PROCLIB. OUT,
// UNIT=3480, VOL=SER=vol ser, LABEL=(n, SL, EXPDT=98000)
//OUTDD DD DISP=SHR, DSN=prefix. procli b-library-name
//SYSIN DD *
COPY OUTDD=OUTDD, I NDD=I NDD
/*
```

If a security package is installed, contact your security administrator to authorize the procedure name for execution if necessary.

## Step 3 – Install the extended JCL keywords on the remote CPU

---

Use one of these options to install the XPAF extended JCL keywords:

- To install XPAF extended JCL keywords or apply maintenance to them without performing an IPL, refer to “[Installing XPAF extended JCL](#)” in chapter 5, “[Customizing your system](#).”
- To activate the keywords until the next IPL without installing them permanently, submit the start procedure command (S *procname*) from the master console. *Procname* is the name of the procedure being started by XOSF, which is usually XJCLPROC.
- To install the XPAF extended JCL keywords permanently, add the COM='S *procname*' command to the COMMNDxx member in SYS1.PARMLIB. This ensures that the procedure is executed each time you IPL.

## Step 4 – Submit the print job

---

After you have copied the files to the remote CPU and installed the extended JCL, you can submit the print job for printing on the host CPU. For instructions on submitting print jobs, refer to [Section Four: Printing Documents with XPAF](#).



## 10. *Using XPAF extended features*

---

This chapter provides instructions for enabling or setting up these extended features of XPAF:

- TCP batch printing is an XPAF feature that allows you to print data streams to decentralized and PCL-capable printers using the TCP/LPR and TCP/IP protocols.
- Xerox Job Control Facility (XJCF) is a program that formats output to your requirements by inserting DJDEs at the beginning of a data stream based on standard IBM JCL keywords. If you currently use XJCF, you may use XPAF in addition to (coexistence mode) or instead of it (simulation mode).
  - In coexistence mode, XPAF and XJCF are both installed and functioning on the same system. XJCF is installed as a JES modification; XPAF is installed as an FSS. Due to differences in the software products, there are some restrictions on the processing that can be performed. Refer to “[Coexistence processing limitations](#)” later in this chapter for more information.
  - In simulation mode, XJCF is not installed on the system. Instead, XPAF generates the proper DJDEs based upon entries in the XJCFSIM table, much like XJCF.

Xerox Direct Print Services (XDS) is an interface between a print application that uses standard Sequential Access Method (SAM) processing and XOSF. XDS invokes XOSF directly without accessing the JES spool or any other spooling subsystem.

## Enabling TCP batch printing

In order to support the various third-party TCP stacks, XPAF uses a batch implementation that allows you to customize TCP support for your site. This implementation is called TCP batch printing.

The sample JCL members XTCPLPRJ and XTCPIPJ are supplied with XPAF in XPFSAMP to enable TCP batch printing on decentralized and PCL-capable printers. Use XTCPLPRJ to send documents using the TCP/LPR protocol, and XTCPIPJ to send documents using the TCP/IP protocol. These members must be installed on your system before you can print using the TCP/LPR or TCP/IP protocols.

Table 10-1 shows the valid printer configurations for each protocol type. Refer to [“Installing the sample TCP JCL”](#) later in this chapter for instructions on how to install the XPAF-supplied sample JCL members on your system.

Table 10-1. Valid printer configurations for TCP batch printing

TCP protocol	Valid printer configurations
TCP/LPR protocol (XTCPLPRJ member)	<ul style="list-style-type: none"> <li>Decentralized printers that are attached to an LPD print server</li> <li>PCL-capable printers that are attached to an LPD print server</li> <li>PCL-capable printers that have a DocuPrint NIC version 4.12 or higher installed</li> </ul>
TCP/IP protocol (XTCPIPJ member)	<ul style="list-style-type: none"> <li>PCL-capable printers that have a DocuPrint NIC version 4.12 or higher installed</li> </ul>



**NOTE:** When using the XTCPLPRJ member, be aware that the TCP/LPR protocol allows only 11 concurrent LPR sessions. However, the TCP/IP protocol does not have this limitation. Therefore, if you are printing to a PCL-capable printer that has a DocuPrint NIC installed, you can use the XTCPIPJ member to avoid this limitation.

When you send a data stream to a printer using the TCP/LPR or TCP/IP protocols, XPAF saves your document as a disk dataset and submits a batch job to send it to the destination printer. When the dataset has been successfully transmitted, XPAF deletes it. If the dataset cannot be transmitted, XPAF will issue an error message stating that you must manually LPR the dataset. Refer to [“Sending TCP batch print jobs”](#) later in this chapter for instructions on how to do this.

For print jobs that contain multiple datasets, XPAF will either save each dataset to a separate disk dataset or save all datasets in an output group to one disk dataset, whichever you specify in the LPRBNDRY printer profile parameter. Refer to [Section Five: XPAF Parameter and Keyword Reference](#) for more information on the printer profile parameters you can specify for TCP batch printing.

## *Installing the sample TCP JCL*

---

Follow this procedure to install the XPAF-supplied TCP JCL and to set up the profile of each printer you will be sending documents to using the TCP/LPR or TCP/IP protocols. The TCP JCL is submitted with the user ID of the user who submitted the original print job. Ensure that all users who will be submitting TCP print jobs have read access to all the datasets used by the TCP JCL.

- Step 1.** Create a dataset for your TCP JCL using the same attributes as XPFSAMP. This is the dataset you will specify in the LPRDSN printer profile parameter.
- Step 2.** Copy the XTCPLPRJ and XTCPIPJ members shipped with XPAF in XPFSAMP into your TCP JCL dataset. Use XTCPLPRJ to send documents using the TCP/LPR protocol, and XTCPIPJ to send documents using the TCP/IP protocol.
- Step 3.** Customize the JCL members for your environment. Refer to the comments provided within each member for customization information. You may either rename the members or use the XPAF-supplied names. You will specify one of these members in the LPRJCL printer profile parameter.
- Step 4.** Create a printer profile for each printer that you will be sending documents to using the TCP/LPR or TCP/IP protocols. At a minimum, include these printer profile parameters:
- IPADDR
  - LPRBNDRY
  - LPRDSN
  - LPRJCL
  - LPRQNAME
  - TCPMODE
  - TCPPORT (for TCP/IP only)

For more information about these TCP-related parameters, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

## *Sending TCP batch print jobs*

---

Follow this procedure to send a document to a decentralized or PCL-capable printer using the TCP/LPR protocol or to a PCL-capable printer using the TCP/IP protocol.

- Step 1.** Ensure that your TCP JCL datasets have been created and contain your customized XTCPLPRJ and XTCPIPJ members. Use XTCPLPRJ to send documents using the TCP/LPR protocol, and XTCPIPJ to send documents using the TCP/IP protocol.
- Step 2.** Ensure that a printer profile has been created for each printer you will be sending documents to using the TCP/LPR or TCP/IP protocols, and that it contains all the necessary TCP-related printer profile parameters.
- Step 3.** Send your document to the destination printer. XPAF will save the document to a disk dataset, and use the specified TCP JCL member to submit a batch job that will send it to the destination printer. When the dataset has been successfully transmitted, XPAF deletes it.

If you have not correctly specified the TCP dataset and JCL member in your printer's profile, XPAF will issue an error message. To print the dataset, you must manually LPR it. For example, if you are using IBM TCP/LPR, you could issue this LPR command:

```
LPR 'dataset-name(member-name)' (AT ip-address PRINTER  
queue-name FILTER L BINARY
```

Refer to IBM's *TCP/IP for MVS: User's Guide* for more information about this and other LPR commands you can use. If you are using another vendor's TCP software, refer to their documentation for valid command syntax.

## *Using TCP-specific commands*

---

For certain printer commands, like CANCEL and RESTART, you must issue an LPR command instead. Refer to your vendor's TCP documentation for valid command syntax.

Also note that for SMF recording, your SMF records will reflect job creation information about the TCP dataset instead of actual printing information. Therefore, you may see differences in your SMF statistics for TCP printing. For example, the SMF record will be updated even if the job did not print.

## Using XPAF and XJCF in coexistence mode

---

For XPAF and XJCF to coexist, you must perform these steps:

- Step 1.** Specify coexistence mode in the printer profile.
- Step 2.** Customize the XSLPDDDB offset table to your XJCF environment.
- Step 3.** If the XJCF mod has been applied to IEFJDT03, apply an XPAF usermod so that XPAF extended JCL can be used in conjunction with XJCF extended JCL.

### Checklist for setting up XJCF in coexistence mode

---

To set up XPAF to run with XJCF in coexistence mode, you must perform these steps in the order that they are listed. As each step is completed, enter a check in the Completed column to track and record your progress.

Step	Action	Completed
1	Update the printer profile	
2	Customize the XSLPDDDB offset table	
3	Apply the XPAF usermod (optional)	

### Step 1 – Update the printer profile

---

To select coexistence mode, edit the printer profile found in the library referenced by the PROFDD initialization parameter, and specify **XJCFMODE=C**.

## Step 2 – Customize the XSLPDDDB offset table

The XSLPDDDB offset table source is supplied in XPFSAMP. As shown in this sample panel, you must copy your Xerox Information Module (XIM) table into the end of the XSLPDDDB source. Enter the member name for your XIM table after the COPY to include your XJCF parameters.

```
.
.
.
      #XPDDDB IFIELD=FLAG7, OFIELD=FLG7      XJCF FLAG7
      #XPDDDB IFIELD=FLAG8, OFIELD=FLG8      XJCF FLAG8
      #XPDDDB IFIELD=FLAG@, OFIELD=FLG@      XJCF FLAG@
*
*
*      MODIFY THE COPY STATEMENT BELOW TO COPY IN YOUR XIM TABLE
*      SOURCE MEMBER.
*
*      COPY prefix.xim-table-member-name
*
XPDDDBEND
```

After you customize the XSLPDDDB offset table, assemble and link-edit it into XPFLDLOAD.

## Step 3 – Apply the XPAF usermod (optional)

If the XJCF mod has been applied to IEFJDT03, you must apply XPAF usermod XUM0011. Applying this usermod allows you to install XPAF and XJCF JDTs and disable the XPAF JDT parameters that are duplicated in XPAF and XJCF. In effect, this causes XJCF keywords to override the corresponding XPAF keywords.



**NOTE:** Before applying XUM0011, change any occurrences of %% in column 1 to ++.

For the DJDE, JDE, JDL, PMODE, and TWOUP extended JCL keywords, there is no effect on processing. For the XDUPLEX extended JCL keyword, tumble duplex is not supported. For the SHIFT extended JCL keyword, variable x-y coordinates are not supported.



**CAUTION:** If you apply this usermod as specified and the XJCF mod has not been applied to IEFJDT03, you will disable the DJDE, XDUPLEX, JDE, JDL, PDE, PMODE, SHIFT, and TWOUP extended JCL keywords.

## Procedure

---

The usermod for installing XJCF in coexistence mode on an MVS/ESA system is distributed in XPFSAMP. To apply the XPAF usermod, follow these steps:

- Step 1.** Create a job to RECEIVE the usermod under SMP/E using the example shown below as a model. Be sure to enter your standard job card information, and change the CSI prefix to the high-level and mid-level qualifiers you used to install XPAF. Change the dataset prefix to the high-level and mid-level qualifiers your site uses to install usermods in XPFSAMP.

If you have previously received the usermod under SMP/E, reject and then RECEIVE the usermod again. As an alternative, you can specify the REWORK keyword on the usermod to RECEIVE it again. Refer to the *IBM System Modification Program Extended Reference* for information about using the REWORK keyword.

```
//job-name JOB job-information
//RCVUMODS EXEC PGM=GI MSMP,
//          PARM='CSI=prefix.CSI',
//          DYNAMNBR=120, REGION=4000K
//*
/*
//SMPHOLD DD DUMMY
//SMPPTFIN DD DISP=SHR,
//          DSN=prefix.XPFSAMP(XUM0011)
//SMPCNTL DD *
SET      BOUNDARY ( GLOBAL ) .
RECEIVE  S(XUM0011) LIST .
/*
```

- Step 2.** Submit the job to RECEIVE the usermod under SMP/E.
- Step 3.** Create a job to APPLY the usermod on your system using the example shown below as a model. Before you submit the job, enter your standard job card information, and change the CSI prefix to the high-level and mid-level qualifiers you used to install XPAF.

```

//job-name JOB job-information
//*****
//* JOB FUNCTION: *
//* ***** *
//* NOTE ==> * THIS USERMOD APPLIES TO MVS/ESA AND ABOVE * *
//* * * == * *
//* ***** *
//* *
//* SMP/E APPLY XPAF USERMOD TO DISABLE XPAF *
//* EXTENDED JCL KEYWORDS (XDUPLEX SHIFT JDE JDL *
//* PMODE DJDE AND TWOUP) AFTER XJCF OR OUTPUT *
//* MASTER ZAP HAS BEEN APPLIED TO MVS MODULE *
//* IEFJDT03. *
//* *
//* IMPORTANT: *
//* MAKE SURE THAT XJCF OR OUTPUT MASTER ZAP HAS *
//* BEEN APPLIED TO IEFJDT03. IF IT HAS NOT BEEN *
//* APPLIED YOU WILL DISABLE THOSE KEYWORDS THAT *
//* ARE USED BY XPAF. *
//* *
//*****
//XJCFESA EXEC PGM=GI MSMP,
// PARM='CSI=prefix.CSI',
// DYNAMNBR=120, REGION=4000K
//
//SMPCNTL DD
// SET BOUNDARY ( XPFTLIB ). APPLY S(XUM0011)
// BYPASS(ID) REDO.
//
/*

```

After you RECEIVE and APPLY the usermod, perform an IPL with CLPA.

## Coexistence processing limitations

---

The differences between XJCF processing and XPAF/XJCF coexistence processing are summarized in this table:

XJCF (stand-alone)	XPAF and XJCF in coexistence
At print time, XJCF creates entries in the PDDb to indicate values to be used in certain DJDE statements.	XPAF finds the values in the PDDb and generates the appropriate DJDE commands for the job.
At print time, XJCF builds DJDEs in the output writer portion of the XJCF JES mods.	The XJCF output writer task is replaced by the XPAF FSS. Therefore, XJCF cannot add DJDEs to the output writer.
At print time, XJCF uses the /*DJDE and /*OUTPUT statements to insert DJDEs into the beginning of the data stream.	The XJCF output writer task is replaced by the XPAF FSS. Therefore, XPAF cannot support the /*DJDE and /*OUTPUT statements.
At XJCF installation, you apply an XJCF mod to IEFJDT03 to use XJCF extended JCL on the //OUTPUT statement.	The XJCF keywords override the duplicate XPAF keywords. DUPLEX does not support tumble duplex. XJCF SHIFT does not support variable x-y coordinates.

## Enabling XJCF simulation processing

---

To set up your system to run XPAF in XJCF simulation mode, you must first create an XJCFSIM table. You can create your XJCFSIM table using one of two options:

- Manually code the entries to the table.
- Create your table from your existing Xerox Information Module (XIM) table(s). XIMCVT is a conversion tool provided in XPFSAMP that translates your XIM table into an XJCFSIM table. This method generates approximately 95 percent of the entries required to simulate your XJCF jobs through XPAF.

You must review the converted source to ensure that all XIM statements were converted correctly and to add the appropriate FORMS and/or CLASS table entries.

### Option 1: Manually creating your XJCFSIM table

---

To create your XJCFSIM table manually, follow these steps.

#### Step 1 – Copy XJCFSIM from XPFSAMP

---

Copy the XJCFSIM member from XPFSAMP. This member provides a model you can use to create your own table.

#### Step 2 – Edit the XJCFSIM member

---

Edit your new XJCFSIM member to add or update the necessary option, JDL, and/or table entries.

#### Step 2A – Update the XJCFSIM OPTION statement

---

There are six processing options you can specify for the XJCFSIM table:

- The DUP option enables you to specify duplicate keywords. Normally, once a particular keyword is specified (for example, in the extended JCL or FORMS table), any subsequent occurrences are ignored (for example, in the CLASS table or initial packet). However, if you specify OPTION,DUP=YES, duplicate keywords are allowed unless the first instance is from extended JCL. Extended JCL always overrides any other DJDE generation.

The default is DUP=NO.

- The OTEXT option allows you to notify the printer operator when a new form is needed. If you specify OPTION,OTEXT=YES, XPAF generates OTEXT messages to inform the printer operator which dataset is printing and which form it requires.

Normally, the OTEXT message uses the WAIT option if the form name is different from the form on the last dataset. However, you can specify OTEXT=(YES,NOWAIT) if you want to receive the OTEXT message without the WAIT. You cannot use multiple forms in a single dataset.

The default is OTEXT=NO.

- For best-fit PDE processing, the TRCLIM option allows you to specify whether the font index value can exceed the number of CHARS specified for the job. You should use this option if your PDE has more than four fonts available.

If you specify TRCLIM=YES, the TRC value cannot exceed the number of fonts specified using the CHARS IBM JCL keyword. Depending on the number of CHARS specified for the job, the font index value can be from 0 to 3.

If you specify TRCLIM=NO, the font index value can exceed the number of fonts specified using the CHARS IBM JCL keyword. The font index value can be from 0 to 15.

The default is TRCLIM=YES.

- The BANRJDL option allows you to specify whether or not a JDL or JDE included in the banner page DJDE packet should be overridden by a value found in the JCL or in the XJCFSIM table.

Normally, if XJCF simulation is active and a JDL or JDE name is found in the banner page initial DJDE packet, that name is replaced with the JDL or JDE name specified for the job (in either the JCL or XJCFSIM table). This ensures that the banner page is included as part of the print job for stapling purposes.

If you specify BANRJDL=NO, however, the JDL or JDE name in the banner page initial DJDE packet is not replaced.

The default is BANRJDL=YES.

- The TRC option allows you to specify if the FONTINDEX= and DATA= DJDEs will be generated when TRC=YES, or OPTCD=J are specified in your JCL.

If you specify TRC=YES, DATA=(1,250) and FONTINDEX=(0,ZERO,4) are generated.

If you specify TRC=NO, neither the DATA= nor FONTINDEX= is generated.

The default is TRC=YES.

- The WARN option allows you to disable the XJC4600 warning message.

The default is WARN=YES.

The OPTION statement, if used, must be the first statement and must be used only once in the XJCFSIM table.

Example:

```
@XJCFSIM OPTION,DUP=YES,OTEXT=YES,  
TRCLIM=NO,BANRJDL=NO
```

## Step 2B – Add the JDL definition statement

A JDL definition statement is mandatory and must follow the OPTION statement, if one is used. This statement names the JDL used to reference other tables coded within XJCFSIM. The JDL name is required and must be specified in columns 1–6. After the JDL definition statement, you can code the tables belonging to that JDL in any order.

For each JDL you use, define the appropriate simulation tables:

- CHARS
- CLASS
- DEST
- FCB
- FLASH
- FORMS
- MODIFY
- PDE



**NOTE:** Numeric labels must be preceded by a #. Some assemblers do not permit labels that begin with numeric characters. However, the @XJCFSIM macro drops the # and generates the correct names.

You can use the ALIAS keyword to allow multiple JDL names to refer to the same tables. The ALIAS keyword is optional.

Using the ALIAS=\* command instructs XJCFSIM to use this table for all JDLs.

Example:

```
DFAULT  @XJCFSIM JDL, ALIAS=(APPL, FCOMB, PGMODE, OPRI NF)
        . . .
        . . .      (tables for DFAULT JDL)
        . . .
TEST    @XJCFSIM JDL
```

### Update the XJCFSIM FORMS table

This feature simulates XJCF FORMS processing. XPAF generates DJDEs for a job based on the form name specified on the DD or OUTPUT JCL card used to process the job.

Your XJCFSIM FORMS table should contain an entry for each form you use and its associated DJDEs. The label for each table entry is a FORMS value. Numeric labels must be preceded by a #. For example, ASML4 and #4 are valid labels.

You can specify the non-DJDE keywords DJDE, FCB, UCS, FLASH, TWOUP, PAPERSIZE, LINECT, XIPADDR, XLPRQNAM, and CLUSTRTB in this table. XPAF processes them as if they were coded in the JCL but does not generate DJDE statements for them.

Example:

```
STD      @XJCFSIM FORMS
#4       @XJCFSIM FORMS,
        ' PMODE=PORTRAIT, DUPLEX=YES, '
ASMP     @XJCFSIM FORMS,
        ' PMODE=PORTRAIT, DUPLEX=YES, '
ASML     @XJCFSIM FORMS,
        ' PMODE=LANDSCAPE, DUPLEX=YES, ' ,
        ' FLASH=ASL2, FCB=LINA, '
ASML4    @XJCFSIM FORMS, ' TWOUP=YES, UCS=XX, ' ,
        ' PMODE=LANDSCAPE, DUPLEX=YES, FLASH=ASL4, FCB=LINB, '
```

Each set of parameters is enclosed in quotes. You can specify up to ten strings of parameters within quotes for a single form name.



**NOTE:** Each string, including the last one, must end with a comma inside the quotes.

### Update the XJCFSIM CLASS table

This feature simulates XJCF's SYSOUT CLASS processing. XPAF generates DJDEs used for a job based on the SYSOUT CLASS specified in the JCL used to process the job.

For each output class, your XJCFSIM CLASS table can contain an entry for that output class and its associated DJDEs. The label for each table entry is a CLASS value. Numeric labels must be preceded by a #. For example, X and #3 are valid labels.

You can specify the non-DJDE keywords DJDE, FCB, UCS, FLASH, TWOUP, PAPERSIZE, LINECT, XIPADDR, XLPRQNAM, and CLUSTRTB in this table. XPAF processes them as if they were coded in the JCL but does not generate DJDE statements for them.

Example:

```
#3       @XJCFSIM CLASS, ' PMODE=LANDSCAPE, DUPLEX=YES, ' ,
        ' FLASH=TEST, FCB=LIN6, '
X        @XJCFSIM CLASS, ' PMODE=PORTRAIT, DUPLEX=NO, '
```

Each set of parameters is enclosed in quotes. You can specify up to 10 strings of parameters within quotes for a single class.



**NOTE:** Each string, including the last one, must end with a comma inside the quotes.

**Update the XJCFSIM DEST table**

This feature allows you to generate DJDEs used for a job based on the DEST specified in the JCL used to process the job.

This table is used to specify the XIPADDR and QNAME to use when routing print jobs to specific printers based on the destination ID specified in the JCL.

For each DEST ID, your XJCFSIM DEST table can contain an entry for that destination and its associated DJDEs. The label for each table entry is a DEST value. Numeric labels must be preceded by a #. For example, X and #3 are valid labels.

You can specify the non-DJDE keywords DJDE, FCB, UCS, FLASH, TWOUP, PAPERSIZE, LINECT, XIPADDR, XLPRQNAM, and CLUSTRTB in this table. XPAF processes them as if they were coded in the JCL but does not generate DJDE statements for them.

Example:

```
RMT25    @XJCFSIM DEST, ' XI PADDR=13. 245. 113. 77, XLPRQNAM=PASSTHRU, ' ,      *
          ' CLUSTRTB=DEFAULT4517, '
PAYROLL  @XJCFSIM DEST, ' XI PADDR=13. 245. 112. 106, XLPRQNAM=PORT1, ' ,      *
          ' CLUSTRTB=DEFAULT4512, '

```

Each set of parameters is enclosed in quotes. You can specify up to 10 strings of parameters within quotes for a single class.



**NOTE:** Each string, including the last one, must end with a comma inside the quotes.

**Update the XJCFSIM FLASH table**

This feature simulates XJCF's FLASH processing. XPAF generates DJDEs based on the values in effect for these keywords in the XJCFSIM FORMS table, XJCFSIM CLASS table, or JCL for the job:

- COPIES — Indicates the copy to which the form will be applied.
- FLASH — Names the IBM form flash.
- PMODE — Indicates the orientation of the job.
- TWOUP — Indicates whether multiple-up formats are used.

For each form you reference using the FLASH IBM JCL keyword, the XJCFSIM FLASH table should contain a corresponding entry that specifies, BFORM, COPIES, FORMS, PMODE, and/or TWOUP values. The label for each table entry is a FLASH value. Numeric labels must be preceded by a #. For example, CX02 and #10 are valid labels.

For each entry in the XJCFSIM FLASH table, you can specify these values:

Table 10-2. XJCFSIM FLASH table entries

Value	Description
BFORM	Valid values: <i>form-name</i> Name of a Xerox form to be printed on the back side of a duplex page. NONE No form.
COPIES	The number that indicates to which copy the forms will be applied. For example, if you enter 3, the form will only be applied to the third copy of the document; if you enter 25, the form will only be applied to the twenty-fifth copy. Valid values: 0 through 255. Default: 0 (all copies)
FORMS	Valid values: <i>form-name</i> Name of a Xerox form to replace the IBM form flash. NONE No form.
PMODE	Valid values: P or PORTRAIT L or LANDSCAPE B or BOTH Specifying PMODE=B is equivalent to specifying PMODE=(P,L) or PMODE=(L,P). Regardless of which value you specify in the JCL, the PMODE value in the JCL will always match the table entry. Default: B
TWOUP	Valid values: Y or YES N or NO B or BOTH Specifying TWOUP=B is equivalent to specifying TWOUP=(Y,N) or TWOUP=(N,Y). Regardless of which value you specify in the JCL, the TWOUP value in the JCL will always match the table entry. Default: N

Example:

```

C000    @XJCFSIM FLASH, PMODE=LANDSCAPE, TWOUP=(Y, N), FORMS=C000L
CX02    @XJCFSIM FLASH,                                     *
        PMODE=LANDSCAPE, TWOUP=N, FORMS=CX02L, BFORM=NONE
CX02    @XJCFSIM FLASH,                                     *
        PMODE=PORTRAIT, TWOUP=NO, FORMS=CX02P, BFORM=NONE
#10     @XJCFSIM FLASH,                                     *
        PMODE=PORTRAIT, TWOUP=YES, FORMS=CX02T, BFORM=NONE
CX05    @XJCFSIM FLASH,                                     *
        PMODE=L, TWOUP=B, FORMS=CX05L, BFORM=NONE
CX05    @XJCFSIM FLASH,                                     *
        PMODE=BOTH, TWOUP=NO, FORMS=CX05P, BFORM=NONE

```

#### Update the XJCFSIM MODIFY table

This feature simulates XJCF's MODIFY processing. XPAF generates DJDEs based on the values in effect for these keywords in the XJCFSIM FORMS table, XJCFSIM CLASS table, or JCL for the job:

- COPIES — Indicates to which copy the CME will be applied.
- MODIFY — Names the CME to be used when printing the document.
- PMODE — Indicates the orientation of the job.

For each CME you reference using the MODIFY IBM JCL keyword, the XJCFSIM MODIFY table should contain a corresponding entry that specifies COPIES, MODIFY, and PMODE values. The label for each table entry is a MODIFY value. Numeric labels must be preceded by a #. For example, CX03 and #5 are valid labels.

For each entry in the XJCFSIM MODIFY table, you can specify these values:

Table 10-3. XJCF MODIFY table entries

Value	Description
COPIES	<p>The number that indicates which copy the CME will be applied to.</p> <p>For example, if you enter 3, the form will only be applied to the third copy of the document; if you enter 25, the form will only be applied to the twenty-fifth copy.</p> <p>Valid values: 0 through 255.</p> <p>Default: 0 (all copies)</p>
MODIFY	The CME to be used when printing the document.
PMODE	<p>Valid values:</p> <p>P or PORTRAIT L or LANDSCAPE B or BOTH</p> <p>Specifying PMODE=B is equivalent to specifying PMODE=(P,L) or PMODE=(L,P). Regardless of which value you specify in the JCL, the PMODE value in the JCL will always match the table entry.</p> <p>Default: B</p>

Example:

```
C001      @XJCFSIM  MODI FY, MODI FY=CD03, PMODE=BOTH, COPI ES=3
CX03      @XJCFSIM  MODI FY, MODI FY=CG13, PMODE=P, COPI ES=0
CX03      @XJCFSIM  MODI FY, MODI FY=GPOD0, PMODE=L, COPI ES=0
#5        @XJCFSIM  MODI FY, MODI FY=GW54, PMODE=B, COPI ES=25
```

### Update the XJCFSIM FCB table

XPAF reads the XJCFSIM FCB table to obtain an LPI value for use in the best-fit PDE selection. LPI values may include up to three decimal places. XPAF will also generate DJDEs from the FCB table entry if they are specified. These would typically be ASSIGN, TOF, BOF, and BEGIN statements to be used instead of using the FCB itself. However, any valid DJDE can be specified. You can specify the non-DJDE keywords DJDE, FCB, UCS, FLASH, TWOUP, PAPERSIZE, LINECT, XIPADDR, XLPRQNAM, and CLUSTRTB in this table. XPAF processes them as if they were coded in the JCL but does not generate DJDE statements for them. The label for each table entry in the XJCFSIM FCB table is an FCB value. Numeric labels must be preceded by a #. For example, LIN6 and #8 are valid labels.

Example:

```
LIN6      @XJCFSIM  FCB, LPI =6,                                     *
          ' BEGIN=(0.50 IN, 0.50 IN), TOF=1, BOF=45, ' ,           *
          ' ASSIGN=(1, 1), ASSIGN=(12, 45), '
#8         @XJCFSIM  FCB, LPI =8.1,                                   *
          ' BEGIN=(0.50 IN, 0.50 IN), TOF=1, BOF=60, ' ,           *
          ' ASSIGN=(1, 1), ASSIGN=(12, 60), '
LIN6      @XJCFSIM  FCB, LPI =10
LPI 1     @XJCFSIM  FCB, LPI =11
LPI 2     @XJCFSIM  FCB, LPI =12.125
```

### Update the XJCFSIM CHARS table

This feature provides CHARS-to-Xerox font translation to determine which PDE to select. During processing, XPAF determines which Xerox font to use based on the values in effect for these keywords in the JCL for the job:

- CHARS — Identifies IBM fonts.
- PMODE — Identifies the document orientation.

For each font you reference using the CHARS IBM JCL keyword, the XJCFSIM CHARS table should contain a corresponding entry that specifies FONTS and PMODE values. The label for each entry identifies a CHARS value. Numeric labels must be preceded by a #. For example, GT10 is a valid label.

Within the XJCFSIM CHARS table, you can specify these values for PMODE:

P or PORTRAIT  
L or LANDSCAPE  
B or BOTH

Specifying PMODE=B is equivalent to specifying PMODE=(P,L) or PMODE=(L,P). Regardless of which value you specify in the JCL, the PMODE value in the JCL will always match the table entry. The default is B.

Example:

```
GT10      @XJCFSIM CHARS, FONTS=L106GT, PMODE=L
GT10      @XJCFSIM CHARS, FONTS=P106GT, PMODE=P
GB10      @XJCFSIM CHARS, FONTS=L106GB, PMODE=LANDSCAPE
GB10      @XJCFSIM CHARS, FONTS=P106GB, PMODE=PORTRAIT
SC10      @XJCFSIM CHARS, FONTS=L106SC, PMODE=LANDSCAPE
SC10      @XJCFSIM CHARS, FONTS=P106SC, PMODE=PORTRAIT
TB10      @XJCFSIM CHARS, FONTS=L05TBC, PMODE=L
TB10      @XJCFSIM CHARS, FONTS=P05TBC, PMODE=P
```

### Update the XJCFSIM PDE table

This feature simulates XJCF's best-fit PDE option. A PDE is always selected unless you do not code any XJCFSIM PDE table.

XPAF selects a PDE based on the values in effect for the FONTS, LPI, PMODE, and TWOUP keywords in the XJCFSIM PDE table. Each keyword has a different importance in determining the best-fit PDE. The order—from most important to least important—is as follows:

1. PMODE — Identifies the document orientation.
2. FONTS — Identifies the fonts used by the job.
3. LPI — Identifies the number of lines per inch.
4. TWOUP — Identifies either single- or multiple-up formats.

Evaluation of the FONTS keyword varies depending on whether font indexing is being used:

- If font indexing is being used (TRC=YES or DCB=OPTCD=J specified in the JCL), all CHARS values are examined against all fonts in each PDE.
- If font indexing is not being used (TRC=YES and DCB=OPTCD=J are not specified in the JCL), only the first CHARS value is examined against the first font in each PDE.

Each entry in the XJCFSIM PDE table should correspond to a PDE defined on the printer. The label for each entry identifies a PDE name. Numeric labels must be preceded by a #. For example, L148GT is a valid label.

For each entry in the XJCFSIM PDE table, you can specify these values:

Table 10-4. XJCFSIM PDE table entries

Value	Description
FONTS	The name or names of the fonts used by the PDE.
LPI	A lines-per-inch value of up to three decimal places.
PMODE	<p>Valid values:</p> <p>P or PORTRAIT L or LANDSCAPE B or BOTH</p> <p>Specifying PMODE=B is equivalent to specifying PMODE=(P,L) or PMODE=(L,P). Regardless of which value you specify in the JCL, the PMODE value in the JCL will always match the table entry.</p> <p>Default: B</p>
TWOUP	<p>Valid values:</p> <p>Y or YES N or NO B or BOTH</p> <p>Specifying TWOUP=B is equivalent to specifying TWOUP=(Y,N) or TWOUP=(N,Y). Regardless of which value you specify in the JCL, the TWOUP value in the JCL will always match the table entry.</p> <p>Default: N</p>

If no matches are found in the XJCFSIM PDE table for the PMODE/LPI/TWOUP/ CHARS combination specified in the JCL, XPAF uses the first PDE in the table. PDE selection processing generates a FORMAT DJDE.

Example:

```

L148GT  @XJCFSIM PDE, PMODE=LANDSCAPE, TWOUP=NO, LPI =8. 1,      *
        FONTS=(L146GT)
P148GT  @XJCFSIM PDE, PMODE=PORTRAIT, TWOUP=NO, LPI =8. 1,      *
        FONTS=(P146GT)
L106GT  @XJCFSIM PDE, PMODE=LANDSCAPE, TWOUP=B, LPI =6,          *
        FONTS=(L106GT)
L106GI  @XJCFSIM PDE, PMODE=LANDSCAPE, TWOUP=(YES, NO),          *
        LPI =6, FONTS=(L106GI , L106GT, L106GB)

```

### ***Step 3 – Assemble and link-edit XJCFSIM***

---

Assemble and link-edit XJCFSIM into the XPAF load library.

You can use the JXJCFSIM member in XPFSAMP to perform this assembly. Modify the DD and COPY statements where necessary.



**NOTE:** The load module name must be XJCFSIM. If you change this name, the module does not assemble correctly.

---

## ***Option 2: Using XIMCVT to create your XJCFSIM table***

---

To create your XJCFSIM table using the sample XIMCVT member, follow these steps.

### ***Step 1 – Edit XIMCVT in XPFSAMP***

---

Edit the XIMCVT member in XPFSAMP. Ensure that the SYSLIB and SYSPUNCH dataset names are correct. Modify the COPY statements at the end of XIMCVT to include your XJCF XIM table and FCBs.

### ***Step 2 – Submit XIMCVT***

---

This job generates the XJCFSIM table source from your XJCF XIM table.

### ***Step 3 – Edit XIMCVT output***

---

Edit the output from the XIMCVT job to perform any customization you need. This output is located in the member identified by the SYSPUNCH DD and is named XIMCVTO. Review all entries to ensure they are correct.

#### ***Step 3A – Review CHARS entries***

---

Review the CHARS entries to verify the correct PMODE has been generated. The generated PMODE is PORTRAIT unless the font name in the XIM FONT macro begins with L.

#### ***Step 3B – Review PDE entries***

---

Review each PDE entry to verify the correct LPI value is coded. An LPI value is generated only if the first font has an LPI specification in the XIM PDE macro.

#### ***Step 3C – Add CLASS and FORMS tables***

---

Because the CLASS and FORMS tables are contained in JES parameters, they cannot be generated from the XIM table. Therefore, you must manually add them to your new XJCFSIM table.

## **Step 4 – Assemble and link-edit XJCFSIM**

---

Assemble and link-edit XJCFSIM into the XPAF load library.

You can use the JXJCFSIM member in XPFSAMP to perform this assembly. Modify the DD and COPY statements where necessary.

## **Setting up JES2 user exits to control XJCF processing**

---

Sample source code is shipped with XPAF for two JES2 user exits that can be used to process XJCF jobs submitted through XPAF. If you are not processing XJCF jobs, do not load these user exits; they will not be used. User exit 4 reads the /\*OUTPUT and /\*DJDE control cards and translates them into JCL which is supported by XPAF. User exit 6 relates the SYSOUT DD statement to the appropriate OUTPUT JCL statement.

These JES2 user exits can be used with XPAF in XJCF simulation mode; however, they cannot be used when XPAF and XJCF coexist on the same system.



---

**NOTE:** You can use JES user exits 4 and 6 on JES2 systems at version 4.3 or before that use the Multi Access Spool (MAS) facility.

---

### **JES2 user exit 4: Routine XRXJ2X4**

---

This user exit tests a job for XJCF-generated JES2 /\*OUTPUT and /\*DJDE control statements and converts them to or merges them with OUTPUT JCL statements. The OUTPUT JCL statements appear in the user JCL with the original /\* statements commented out.

This user exit is processed only if the job contains /\*OUTPUT or /\*DJDE control cards.

### **JES2 user exit 6: Routine XRXJ2X6**

---

This user exit scans each SYSOUT DD statement for a code name subparameter.

If there is a third subparameter, the user exit searches for a matching code name in the Xerox JES2 user exit common job control block (XJXJCB) created during user exit 4 processing.

When a match is found, the statement is reconstructed to create a SYSOUT DD statement using the code name to refer back to the OUTPUT JCL statement.

The reconstructed SYSOUT DD statement does not appear in the JCL because by this point in the JES2 processing, the JCL has been broken down to converter/interpreter text statements, represented by keys that identify various JCL parameters. These keys are documented in JES2 Assembly HASPDOG and are distributed in IBM's SYS1.AMACLIB in the IEFKEYS and IEFTXTFT macros.

This user exit is processed only if user exit 4 is processed.

## Exit-to-exit communication

---

Communication between the two user exit routines is done through XJXJCB.

## Exit routine recovery

---

An ESTAE recovery routine is provided in both user exits. If JES2 encounters an abend while in the user exit routines, the ESTAE recovery routine cancels the print job that is running. The user exits can then be disabled quickly via the JES2 operator command \$T EXIT $n$  DISABLE. Contact your systems programmer to fix the problem causing the abend.

The JES2 address space does not need to be shut down, and standard JES2 processing is unaffected.

## Installing JES2 user exits

---

Follow this procedure to install the JES2 user exits:

- Step 1.** Review the sample source code provided in XPFSAMP and if necessary, customize it for your site. The source for user exit 4 is stored in the XRXJ2X4 member. The source for user exit 6 is stored in the XRXJ2X6 member.

These user exits reference these user fields from the JES2 \$JCT control block:

- JCTUSERD:A(XJXJCB)
- JCTUSERE:JCTJOBID
- JCTUSERF:JCTJOBID

These fields cannot be used by JES2 user exit 4 or 6 and another JES2 user exit simultaneously. If one of these fields must be used by another JES2 exit, specify a different JCTUSER field for exit 4 or 6. Five JCTUSER field definitions are required.

- Step 2.** Assemble and link-edit the source code using the JCL provided in the XRXJXASM member in XPFSAMP. Because both user exit routines execute either in the JES2 main task or subtask environments, they should be loaded into private PVT storage.

There are two methods for packaging the user exits:

- Using separate load modules
- Link-editing with HASJES20

### Using separate load modules

---

This is IBM's suggested method for loading user exits.

- In the JES2 initialization stream, include the LOADMOD initialization statement. This causes the user exit routines' load modules to be loaded into PVT storage.
- Include the JES EXIT(*nnn*) initialization statement which associates the exit routine entry point with the exit point in the JES2 code. The EXIT(*nnn*) initialization statement matches the exit point “” label JCBL for the \$EXIT macro in the JES2 code. The EXIT(*nnn*) initialization statement identifies the label as the entry point of the exit routine for exit point “*nnn*”. If your installation uses multiple routines for exits 4 and 6, the order of invocation is determined by the order of appearance on the EXIT(*nnn*) initialization statement.
- Perform a JES2 warm start to enable the changes you made to the initialization parameters.

### Link-editing with HASJES20

---

The JES2 user exit routines can be link-edited with HASJES20. You must use weak external names for the module names. These names should be the same as the label used on the \$MODULE macro within the exit routines. For HASJES20, the weak external names would be HASPXJ04 and HASPXJ06.

For a complete discussion of JES2 user exits, refer to the IBM publication *JES2 Customization*.

## XPAF in standard mode

---

If you no longer use XJCF, you do not need to run XPAF in simulation mode.

To use XPAF in standard mode, edit the printer profile found in the library referenced by the PROFDD initialization parameter and specify XJCFMODE=N.

## Setting up XDS

---

This section describes the procedure used in setting up Xerox Direct Print Services (XDS). It also explains the different options you can select when initializing XDS.

### Pre-setup considerations for XDS

---

The information in this section will help you make setup decisions for the XDS subsystem. Read the information and decide how you want to handle these considerations before you set up XDS.

#### Setup materials

---

Your sample source library contains these members which are used for setting up XDS:

XDSCOPY	Contains sample JCL to copy all XDS modules from the user-installed XPFLOAD library to the user-defined LNKST library.
XDSMCS	Contains the XUMXDS1 usermod, which is called by XDSSETUP to move all XDS modules to a separate dataset. It also reestablishes JCLIN for all XDS XOSF members.
XDSSETUP	Contains sample JCL for: <ul style="list-style-type: none"><li>• Allocating the XDSLOAD library dataset</li><li>• Adding the DDDEF to the SMPCSI target and distribution zones for XDSLOAD</li><li>• Receiving and applying the XUMXDS1 usermod</li><li>• Using UCLIN to change the SYSLIB entry in the CSI distribution library for XDS mods from XPFLOAD to XDSLOAD</li></ul>
XDSSTART	Contains a sample proc used to start XDS.
XDSSTOP	Contains a sample proc used to stop XDS.

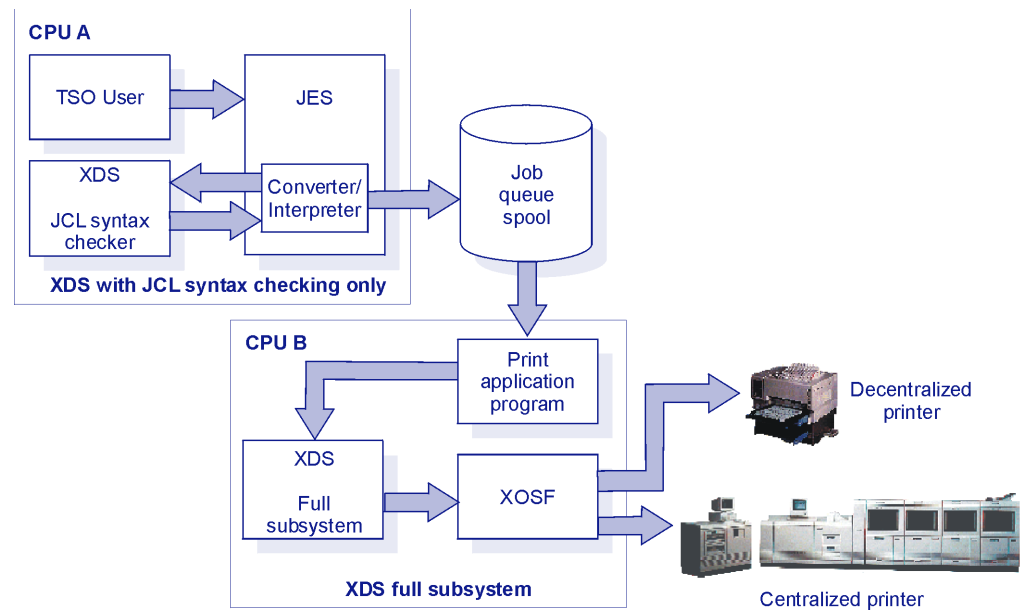
## XDS subset

The XDS subsystem performs all functions of XDS. You may, however, elect to use a subset of XDS which performs only JCL syntax checking of the SUBSYS parameter and uses no XOSF overhead. Use this XDS subset in a multiple CPU environment to submit print jobs from one CPU to another CPU with the specified printer attached.

If you use the XDS subset, you will need another copy of the full XDS subsystem running on the CPU to which the print jobs are sent. This CPU must have the printer attached to it.

Figure 10-1 illustrates a multiple processor environment with a different version of XDS installed for each processor.

Figure 10-1. Multiple processor environment for XDS



## XDS initialization options

You can initialize XDS in one of these ways:

- Automatically, by the Master Scheduler at IPL, before JES is started
- Automatically, by MVS at IPL, after JES is started
- Manually by issuing the MVS START operator command



**NOTE:** You must initialize the XDS subsystem before you can submit any job using XDS.

Complete the following checklist for any XDS initialization option.

## Checklist for setting up XDS

---

To set up XDS initialization, you must perform these steps in the order that they are listed. As each step is completed, enter a check in the Completed column to track and record your progress.

Step	Action	Completed
1	Modify XDSSETUP	
2	Submit XDSSETUP	
3	Create a start-up proc	
4	Modify the SYS1.PARMLIB members	
	A Update the IEFSSNxx member	
	B Update the COMMNDxx member	
	C Authorize the XDSLOAD library	
5	Define XDSSSTART and XDSSSTOP	
6	Define initialization parameters	
7	Define the printer profiles	
8	Perform an IPL	
9	Verify the installation	

### Step 1 – Modify XDSSETUP

---

Change the variables in the XDSSETUP sample JCL to reflect your user-defined qualifiers. Each of the required changes is marked “<== CHANGE” in the XDSSETUP sample JCL.

### Step 2 – Submit XDSSETUP

---

Submit the job XDSSETUP. When this job finishes, all modules required for XDS will reside in the libraries you specified in the job JCL.

## Step 3 – Create a start-up proc

---

To use the XDS subsystem, you must create a start-up proc for this XOSF. Use the sample proc STAGE2(XOSF00) as a base, then follow these guidelines for the start-up proc:



---

**NOTE:** The name you specify for this XOSF FSS must be unique and not used for any other XOSF FSS

---

Later in these procedures you will be allocating a new XINPARM library with a unique name. Decide now on the XINPARM library name. Include a DD statement in this XOSF start-up proc that names this new XINPARM library.

- If you are setting up XDS to be initialized before JES is started:
  1. Place the XOSF start-up proc in SYS1.PROCLIB.
  2. Be sure there are no SYSOUT statements in the XOSF start-up proc.
  3. Be sure all dataset names in the XOSF start-up proc have a high level qualifier that is cataloged in the Master Catalog.
  4. For non-VSAM datasets, make sure the DD statement in the XOSF start-up proc specifies the UNIT and VOLSER.
  5. If you are setting up XDS to be initialized after JES is started, place the XOSF start-up proc in a JES-controlled proclib.

## Step 4 – Modify the SYS1.PARMLIB members

---

These steps describe how to update specific members of SYS1.PARMLIB.

### Step 4A – Update the IEFSSNxx member

---

Add the XOSF start-up proc name to the SYS1.PARMLIB(IEFSSNxx)FSS list. Follow these guidelines:

- If you are using all functions of XDS, include these parameters:

*xds-name*,XDSINITS,*character*

where

- |                  |  |
|------------------|--|
| <i>xds-name</i>  | The 4-character XDS subsystem name. It must be the same as the name of the XOSF start-up proc you created in SYS1.PROCLIB.   |
| XDSINITS         | The name of the XDS initialization routine used by XDS for the full subsystem. XDSINITS resides in the MVS LNKST library where XDS was loaded. Specify this parameter only if you are setting up XDS to start before JES is started. |
| <i>character</i> | Your optional subsystem command character. Specify this parameter only if you are setting up XDS to start before JES is started.   |

- If you are using only the JCL syntax checking function of XDS, use these parameters:

*xds-name*,XDSINITJ

where

- |                 |   |
|-----------------|---|
| <i>xds-name</i> | The 4-character XDS subsystem name. It must be the same as the name of the XOSF start-up proc you created in SYS1.PROCLIB.  |
| XDSINITJ        | The name of the XDS initialization routine used by XDS for the partial subsystem which does JCL syntax checking only. XDSINITJ resides in the MVS LNKST library where XDS was loaded. |

### Step 4B – Update the COMMNDxx member

---

If you are setting up XDS to start automatically after JES is started, add this command statement to the member SYS1.PARMLIB(COMMNDxx):

COM='START XDSSTART'

## Step 4C – Authorize the XDSLOAD library

---

To authorize the XDSLOAD library for use by XDS, perform these steps:

1. Add the XDSLOAD library to the MVS link list, SYS1.PARMLIB(LNKLSTxx).
2. Authorize the XDSLOAD library by adding it to SYS1.PARMLIB(IEAAPFxx).

## Step 5 – Define XDSSTART and XDSSTOP

---

To define the XDSSTART start-up proc, the XDSSTOP abend recovery proc, and the command character for XDS, perform these steps:

1. Copy these members to a JES-controlled proclib:

```
XDSSTART
XDSSTOP
```

2. Modify the PARM parameter on the EXEC statement for the XDSSTART proc to read:

```
//XDSSTART EXEC PGM=XDSSTART,
      PARM='xds-name,character'
```

where

*xds-name* The 4-character XDS subsystem name. It must be the same as the name of the XOSF start-up proc you created in SYS1.PROCLIB, and the name of the XOSF FSS you specified in SYS1.PARMLIB(IEFSSNxx).

*character* The optional subsystem command character. Be sure the character you choose is not used for any other subsystem command character.

3. Modify the PARM parameter on the EXEC statement for the XDSSTOP proc to read:

```
//XDSSTOP EXEC PGM=XDSSTOP,PARM=xds-name
```

where *xds-name* is the 4-character XDS subsystem name. This must be the same as the name of the XOSF start-up proc you created in SYS1.PROCLIB, and the name of the XOSF FSS you specified in SYS1.PARMLIB(IEFSSNxx).

## Step 6 – Define initialization parameters

---

Define the initialization parameters for the XDS subsystem interface by modifying your existing XINPARM library. If you do not have an existing XINPARM library, you must allocate one with a unique name, then modify it with these parameters:

1. Add this parameter and its value to the XINSXOAF member in the XINPARM library:  
COMSSTYP=DIRECT
2. Add these parameters and their values to the XINSXOSF member in the new XINPARM library:

```
COMSSID=subsys-name,
COMSSTYP=DIRECT,
SUBSYS=subsys-name,
XLOGDSN=dataset-name,
ALOGDSN=dataset-name (optional)
```

The values for COMSSID and SUBSYS must be identical. They are the same as the name of the XOSF start-up proc you created in SYS1.PROCLIB, and the name of the XOSF FSS you specified in SYS1.PARMLIB(IEFSSNxx).



**NOTE:** XDS only supports an SWA below the 16M line. For JES2 systems, specify SWA=BELOW in the JOBCLASS initialization parameter. For JES3 systems, select option 0, 1, 2, or 3 in the CIPARM initialization parameter to indicate an SWA below the 16M line.

---

## Step 7 – Define the printer profiles

---

Define a printer profile for each printer to be used with XDS. For instructions on creating your printer profiles, refer to [“Setting up printer profiles”](#) in chapter 5, [“Customizing your system.”](#)

## Step 8 – Perform an IPL

---

Perform an IPL to complete XDS setup. An IPL will:

- Authorize required XDS and XOSF libraries
- Update the MVS link list
- Update the Subsystem Name Table

## Step 9 – Verify the installation

---

You can verify the accuracy of your software installation by performing an IVP. For more information about performing an IVP, refer to chapter 16, [“Performing an installation verification procedure.”](#)

# 11. *XPAF printer support*

---

This chapter provides a listing of centralized, decentralized, and PCL-capable printers which are supported by XPAF. It also lists the parameter and keyword settings necessary for specific interface devices. For all printer types, the capabilities of XPAF are limited to the functional abilities of the printer. For example, if a printer does not print duplex, XPAF cannot duplex a document sent to that printer.

## *Centralized printer models*

---

XPAF supports these centralized printers:

9790	DocuPrint 4235 LPS (XPPM mode)
9700	DocuPrint 4135 LPS
8790	DocuPrint 4090 LPS
8700	DocuPrint 4050 LPS
DocuPrint 4890 LPS	DocuPrint 180 EPS
DocuPrint 4850 LPS	DocuPrint 180 LPS
DocuPrint 4650 LPS	DocuPrint 96 LPS
DocuPrint 4635MX LPS	DocuPrint 92C LPS
DocuPrint 4635 LPS	

For information on setting up your centralized printers, refer to chapter 12, "[Setting up centralized printers.](#)"

## *Decentralized printer models*

---

XPAF supports these decentralized printers:

4700 II	4045
4030 II	4213 II
3700	4197 MICR
DocuPrint 4235 (XDPM mode)	

In general, decentralized printers do not connect directly to the host system. Xerox provides protocol conversion devices which enable you to connect those printers which cannot be connected directly.

For information on setting up your decentralized printers, refer to chapter 13, "[Setting up decentralized printers.](#)"

## PCL-capable printer models

---

XPAF supports these PCL-capable printers:

4900	DocuPrint 180 NPS
4700 II (Laserjet IIID emulation)	DocuPrint 155 NPS
4230 MRP	DocuPrint 115 NPS
4220 MRP	DocuPrint 100 NPS
4219 MRP	DocuPrint 96 NPS
4215 MRP	DocuPrint 92 C NPS
4213 II (Laserjet IIID emulation)	DocuPrint 65
Document Centre 265LP	DocuPrint C55
Document Centre 255LP	DocuPrint N40
DocuPrint 4890 NPS	DocuPrint N32
DocuPrint 4850 NPS	DocuPrint N24
DocuPrint 4635 NPS	DocuTech 6180
DocuPrint 4517	DocuTech 6155
DocuPrint 4512	DocuTech 6135
DocuPrint 4508	DocuTech 6115
DocuPrint 4235 II (Laserjet IIID emulation)	DocuTech 6100
DocuPrint 4090 NPS	Phaser 850DP
DocuPrint 4050 NPS	Phaser 750DP
DocuPrint 180 EPS	

For information on setting up your PCL-capable printers, refer to chapter 14, "[Setting up PCL-capable printers.](#)"

## VIPP-enabled printers

---

VIPP-enabled printers are printers that support VIPP, but are otherwise not supported by XPAF.

## Setting parameters and keywords for interface devices

The tables in this section list the LU modes supported for the various interface devices supported by XPAF. They show the relationship between the value specified for the CONVERTER printer profile parameter and the valid values, by printer command language supported, for the LUTYPE printer profile parameter.

For example, if you are printing a data stream via the AGILE 6287 ALLY interface controller to a decentralized printer that supports XES commands, you may enter either LU1 or LU3 in the LUTYPE printer profile parameter for that printer.

The tables are divided into the two different configuration types used by XPAF: 3270 and 3770. The 3270 configuration is further divided into devices external to the printer and devices located internally.



**NOTE:** You specify the data stream being printed via the PCLDS extended JCL keyword. For more information on this keyword, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

Table 11-1. 3270 configuration (external devices)

Interface device	CONVERTER printer profile parameter	PCLDS extended JCL keyword	LUTYPE printer profile parameter
AGILE 6287Ultra interface controller	AGILE	HPGL	LU1 or LU3
		XPPM	not supported
		PCL5	LU1 or LU3
		POST	LU1 or LU3
		XES	LU1 or LU3
AGILE 6287 ALLY interface controller	ALLY	HPGL	LU1 or LU3
		XPPM	not supported
		PCL5	LU1 or LU3
		POST	LU1 or LU3
		XES	LU1 or LU3
AX-7 Cobra+ protocol converter	COBRA	HPGL	LU0, LU1, or LU3
		XPPM	not supported
		PCL5	LU0, LU1, or LU3
		POST	LU0, LU1, or LU3
		XES	LU0, LU1, or LU3

Table 11-1. 3270 configuration (external devices) (Continued)

Interface device	CONVERTER printer profile parameter	PCLDS extended JCL keyword	LUTYPE printer profile parameter
BARR PRINT/GATE	BARRGATE	HPGL	LU1
		XPPM	not supported
		PCL5	LU1
		POST	LU1
		XES	LU1
i-data 3270 C/RS protocol converter	3270C/RS	HPGL	LU0, LU1, or LU3
		XPPM	not supported
		PCL5	LU0, LU1, or LU3
		POST	LU0, LU1, or LU3
		XES	LU0, LU1, or LU3
i-data Coax PCL interface card	XCO	HPGL	LU1
		XPPM	not supported
		PCL5	LU1
		POST	LU1
		XES	not supported
MPI Technologies AT02G printer adapter	AT02G	HPGL	LU0, LU1, or LU3
		XPPM	not supported
		PCL5	LU0, LU1, or LU3
		POST	LU0, LU1, or LU3
		XES	LU0, LU1, or LU3
MPI Technologies CTY-2 printer adapter	CTY-2	HPGL	LU1 or LU3
		XPPM	not supported
		PCL5	LU1 or LU3
		POST	LU1 or LU3
		XES	LU1 or LU3

Table 11-1. 3270 configuration (external devices) (Continued)

Interface device	CONVERTER printer profile parameter	PCLDS extended JCL keyword	LUTYPE printer profile parameter
Xerox 274 interface controller	274	HPGL	LU1
		XPPM	not supported
		PCL5	LU1
		POST	LU1
		XES	LU0, LU1, or LU3
Xerox /4 interface controller	4	HPGL	LU0, LU1, or LU3
		XPPM	not supported
		PCL5	LU0, LU1, or LU3
		POST	LU0, LU1, or LU3
		XES	LU0, LU1, or LU3
Xerox /4X interface controller	4X	HPGL	LU0, LU1, or LU3
		XPPM	not supported
		PCL5	LU0, LU1, or LU3
		POST	LU0, LU1, or LU3
		XES	LU0, LU1, or LU3
None <sup>1</sup>	NONE	HPGL	LU1
		XPPM	not supported
		PCL5	LU1
		POST	LU1
		XES	LU1

<sup>1</sup> OS/2 platform with Communications Manager driving a 3270 interface card.

Table 11-2. 3270 configuration (internal devices)

Interface	CONVERTER printer profile parameter	PCL printer profile parameter	LUTYPE printer profile parameter
Xerox 4045 120	4045-0 4045-1	HPGL	not supported
		XPPM	not supported
		PCL5	not supported
		POST	not supported
		XES	LU0, LU1, or LU3
Xerox Coax/Twinax Option (XCTO) — US	XCTO-US	HPGL	not supported
		XPPM	not supported
		PCL5	not supported
		POST	not supported
		XES	LU0, LU1, or LU3
Xerox Coax/Twinax Option (XCTO) — International	XCTO-RX	HPGL	not supported
		XPPM	not supported
		PCL5	not supported
		POST	not supported
		XES	LU0, LU1, or LU3

Table 11-3. 3770 configuration

Interface	CONVERTER printer profile parameter	PCL printer profile parameter	LUTYPE printer profile parameter
Xerox 271 CM	271-1 271-2	HPGL	not supported
		XPPM	LU1
		PCL5	not supported
		POST	not supported
		XES	LU1

Table 11-3. 3770 configuration (Continued)

Interface	CONVERTER printer profile parameter	PCL printer profile parameter	LUTYPE printer profile parameter
871 CM	871	HPGL	not supported
		XPPM	LU1
		PCL5	not supported
		POST	not supported
		XES	not supported
BARR/SNA RJE (centralized)	BARRSNA	HPGL	not supported
		XPPM	LU1
		PCL5	not supported
		POST	not supported
		XES	LU1 <sup>1</sup>
3780 bisynchronous adapter installed in a 3700 printer	NTO	HPGL	not supported
		XPPM	LU1
		PCL5	not supported
		POST	not supported
		XES	LU1
Modem	SNA	HPGL	not supported
		XPPM	LU1
		PCL5	LU1
		POST	not supported
		XES	LU1

<sup>1</sup> This value is valid only for the 4235 printer in XDPM mode.

## Printer setup information

Some Xerox printers support more than one printer command language. Table 11-4 lists each printer supported by XPAF and the chapter(s) in which you can find information on setting up those printers. The table also lists the required emulation modes, if applicable, and the recommended processing mode.

Table 11-4. Printer setup reference

Printer model	Setting up centralized printers	Setting up decentralized printers	Setting up PCL-capable printers
9790	X		
9700	X		
8790	X		
8700	X		
6180			X
6155			X
6135			X
6115			X
6100			X
4900			X
4890 LPS	X		
4890 NPS			X
4850	X		
4850 NPS			X
4700 II		X <sup>1</sup>	X (via HP Laserjet IIID emulation)
4650 LPS	X		
4635 LPS	X		
4635MX LPS	X		
4635 NPS			X
4517			X
4512			X

Table 11-4. Printer setup reference (Continued)

Printer model	Setting up centralized printers	Setting up decentralized printers	Setting up PCL-capable printers
4508			X
4235 LPS	X (XPPM mode)	X <sup>1</sup> (XDPM mode)	X (via HP Laserjet IID emulation)
4230 MRP			X
4220 MRP			X
4219 MRP			X
4215 MRP			X
4213 II		X <sup>1</sup>	X (via HP Laserjet IIID emulation)
4197 MICR		X	
4135 LPS	X		
4090 LPS	X		
4090 NPS			X
4050 LPS	X		
4050 NPS			X
4045		X	
4030 II		X	
3700		X	
180 EPS	X		X
265 LP			X
255 LP			X
180 LPS	X		
180 NPS			X
96 LPS	X		
155 NPS			X
115 NPS			X
100 NPS			X

Table 11-4. Printer setup reference (Continued)

Printer model	Setting up centralized printers	Setting up decentralized printers	Setting up PCL-capable printers
96 NPS			X
92C LPS	X		
92C NPS			X
C55			X
DP 65			X
N24			X
N32			X
N40			X
Phaser 850DP			X
Phaser 750DP			X

<sup>1</sup> Recommended processing mode.

## 12. *Setting up centralized printers*

---

This chapter provides instructions on setting up your centralized printers to print documents from XPAF.

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

### *Connections to host and communication protocols*

---

You can connect your centralized printer to the host in two ways:

- Channel-attached, using 3211 or XNS protocols
- Remotely-attached, using 871 Communications Module (CM), standard BARR/SNA RJE, extended BARR/SNA RJE interfaces, or BARR/PRINT for TCP/IP.



---

**NOTE:** You cannot switch back and forth between channel-attaching a printer and using the 871 CM. If you use the 871 CM, the printer must be dedicated to this type of connection.

---

### *Channel-attached centralized printers*

---

Channel-attached centralized printers use either the standard IBM 3211 protocol or the 3211 XNS interface protocol to communicate directly with the MVS host. To use the 3211 XNS protocol, the printer must be running version 2 operating system software (OSS V2) or above.

When centralized printers use the 3211 XNS protocol, they can exchange data with XPAF such as printer operational status and printer resource information. This optimizes XPAF's resource management capabilities.

The 3211 XNS protocol is supported by the HIP task. HIP is the interface at the printer that communicates with XPAF (HIP mode) or via the 871 Communication Module (ONLINE mode).

- In HIP mode, the printer uses the 3211XNS protocol to exchange data (such as the printer's operating status and resource availability) with XPAF.
- In ONLINE mode, the printer uses the standard IBM 3211 protocol. There is no two-way communication between XPAF and the printer in this mode.

### *Limitations on cable lengths*

---

The distance between the host and a channel-attached printer is limited by the cable length. Refer to your host system's hardware installation manual for information on the maximum cable lengths allowed.

If channel extenders are supported by your host system, you can use them to extend the distance between the host and the printer. For example, you could install your host system in one state and the printer in another.

You can use a channel extender only if these criteria are met:

- The channel extender must be compatible with the 3211 XNS command set.
- The channel extender must control timing situations correctly. That is, it must accurately simulate channel timing and responses.
- The XPAF host/channel extender configuration must conform to the vendor's specifications.

### *Remotely-attached centralized printers*

---

You can use either 871 CM or BARR/SNA RJE to remotely attach a centralized printer to the MVS host.

These interface devices enable you to send data from a host computer via a telephone modem to a remotely-attached centralized printer running V2, V3, or V4 OSS. Communication is limited to the transmission of data streams from XPAF to the printer. To the host computer, the 871 CM or BARR/SNA RJE look like an IBM 3776 or 3777.

You can also attach remotely attached centralized printers to the MVS Host via TCP/IP using BARR/PRINT for TCP/IP.

## Running in HIP mode

---

When you run a centralized printer in HIP mode, the printer updates XPAF regarding the availability of resources on the printer. You do not need to use the XOAF utilities to update the default resource lists each time a resource is added or deleted from the printer. For this reason, we recommend that you run centralized printers in HIP mode. Make sure that your printer supports HIP and that it is GENed to run in HIP mode.

To run a centralized printer in HIP mode, perform these steps:

- Step 1.** Specify **XNS=YES** in the printer's profile.
- Step 2.** Edit the HIP.LIB file (or HIP.CMD for printers running V2.1 OSS) to point to your installation's default JDL instead of OLDUMP.JDL that the HIP command currently references.
- Step 3.** At the printer console, enter **HIP** to put the printer online to XPAF.  
  
Perform these steps for each printer you want to run in HIP mode. For more information about HIP commands, refer to your printer's operator guide or reference manual.

## Running in ONLINE mode

---

To run centralized printers in ONLINE mode, perform these steps:

- Step 1.** Specify **XNS=NO** in the printer's profile.
- Step 2.** Specify **LIBRARY=ddname** in the printer's profile to identify the native library where lists of resident fonts, forms, images, and logos are maintained.  
  
If you do not specify **LIBRARY=ddname**, XPAF will download the same resources every time the printer is started, which increases processing time.
- Step 3.** At the printer console, enter **ONLINE** to activate online processing.
- Step 4.** At the printer console, enter **START** to start your default JSL.  
  
You must perform these steps for each printer you want to run in ONLINE mode. For more information about ONLINE commands, refer to your printer's operator guide or reference manual.

## Using the 871 CM

---

The 871 CM is a front-end communication device used with remotely-attached centralized printers in an SNA/SDLC or bisynchronous (BSC) environment.

To use the 871 CM with XPAF, perform these steps:

- Step 1.** Edit the HIP.LIB file (or HIP.CMD for printers running V2.1 OSS). Specify **HOST=871** and ensure that the START command is set up for the HIP871 JSL.
- Step 2.** During a SYSGEN, set the configuration options on the printer to specify the 871 CM.
- Step 3.** Ensure that the offset value for the DJDEOF $nn$  and DJDESK $nn$  initialization parameters is one less than the offset value specified in HIP871 JSL. For example, if the offset is 7 in the JSL, it should be 6 in the initialization parameters. The offset in HIP871 JSL must be at least 1.  
A copy of the HIP871 JSL is distributed in XPFSAMP.
- Step 4.** In XOAF, use the XOAF Load PDL option on the Load Resources menu to load the HIP871 JSL into the appropriate native PDL library.
- Step 5.** Download the HIP871 JSL to the printer and compile it using the printer's PDL compiler.
- Step 6.** In the printer's profile, specify these parameters:  
 CONVERTER=871  
 LUTYPE=LU1  
 METAJDE=PGMODE (for page-formatted or AFP jobs)  
 METAJDL=HIP871 (for page-formatted or AFP jobs)  
 XNS=NO  
 SLU=*vtam-name*  
 WRITER=REMOTE




---

**NOTE:** If you receive error messages indicating invalid file headers, call Xerox Technical Support to determine if you have received the appropriate printer patches.

---

## Using BARR/SNA RJE

---

BARR/SNA RJE is a communication interface that can be used to remotely attach centralized printers to the host. You can specify two different modes:

- Standard BARR/SNA RJE support is the most common way a printer is defined to XPAF. It provides these features:
  - Support for up to six centralized printers on the PRINT370 adapter
  - Support for the 4235 in XPPM mode on the PC parallel port
  - The ability for you to start printers individually
- Extended support is primarily used when a BARR/SNA RJE workstation is at a remote site and either has no operator support or no access to an operator console.

Standard support and extended support provide the same communication functionality. However, with standard support, XPAF initiates the session to the printer, and with extended support, the BARR/SNA RJE workstation initiates the session.

BARR/SNA RJE release 90C2.2 or higher is required for use with XPAF. Refer to the following sections for information about using BARR/SNA RJE.

### Standard BARR/SNA RJE

---

To use standard BARR/SNA RJE support with XPAF, perform these tasks using the information that follows in this chapter:

1. Configure the BARR/SNA RJE workstation. Standard support is designated to BARR/SNA RJE software by specifying Logon Type as “Host Initiated” in the RJE Description.
2. Configure an XPAF printer profile for each printer attached to the BARR/SNA RJE workstation. Standard support is designated in the printer profiles by using the SLU parameter to assign LUs statically to each printer profile. If multiple printers are connected to the BARR/SNA RJE, use the SELECT parameter to identify the printer with which each profile is associated.

### Configuring the BARR/SNA RJE workstation

---

For XPAF to communicate with a BARR/SNA RJE-attached printer, specific RJE Description and S/370 Channel-Attached Printer parameters must be set during BARR/SNA RJE installation.

Use these procedures to configure a BARR/SNA RJE workstation in standard support mode.

### Setting up the RJE Description

---

The RJE Description contains the parameters needed by the BARR/SNA RJE program and the host system.

Follow this procedure to create an RJE Description:

- Step 1.** From the BARR/SNA RJE workstation, access the Installation Description menu by following the procedure described in the BARR/SNA RJE documentation.
- Step 2.** Select **RJE Description**.
- Step 3.** At the RJE Description screen, complete these steps:
  - a. Set 'RJE System?' to **JES2**. You must enter JES2 irrespective of your actual JES system. BARR/SNA RJE generates JES initialization statements based on this parameter.
  - b. For 'Remote Name,' enter a unique workstation name in the format RMTnnnn.
  - c. Omit the 'Password' parameter.
  - d. For 'Printers,' enter the number of PRINT370-attached Xerox printers. BARR/SNA RJE supports up to six PRINT370-attached printers.
  - e. For 'Punches,' enter **0**.
  - f. For 'Readers,' enter **0**.
  - g. For 'APPLID,' omit this parameter.
  - h. For 'LOGMODE,' enter **BATCH**. This is the BARR/SNA RJE-provided logmode.
  - i. For 'Logon Type?,' enter **Host Initiated**.

## Defining S/370 printers

---

In addition to the RJE Description parameters, you also must specify PRINT370 parameters. To perform this step, you must have the PRINT370 package, including adapter, cable, terminators, and software installed on your system.

Complete this procedure to define an S/370 printer to BARR/SNA RJE.



---

**NOTE:** Use the default setting for any parameter displayed on a screen but not listed in this section.

---

- Step 1.** Access the Installation Description menu by following the procedure described in the BARR/SNA RJE documentation.
- Step 2.** Select **S/370 Channel-Attached Printers**.
- Step 3.** From the list of printers displayed, select the appropriate printer.
- Step 4.** At the S/370 Channel-Attached Printer screen, set 'Printer type?' to **Xerox laser**.
- Step 5.** Select **Set Printer Options**.
- Step 6.** At the Printer Options screen, set 'Modify advanced printer options?' to **Yes**.
- Step 7.** At the Advanced Printer Options screen, enter these values:
  - Set 'Pad zero length records' to **No**.
  - Set 'Pad zero length Skip to channel 1' to **No**.

## Configuring the printer profile

---

XPAF uses initialization and/or printer profile parameters to define a BARR/SNA RJE workstation. Review these printer profile parameters to determine if you need to change the settings.

- BUFSIZE
- CONVERTER
- SDLCRLC
- SELECT
- SETUP
- SLU
- WRITER

For more information about these parameters, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

### *Sample profile*

---

This figure shows a sample printer profile for standard BARR/SNA RJE support.

```
*PRT4050  
DEVI CE=4050,  
BUFSI ZE=512,  
CONVERTER=BARRSNA,  
LUTYPE=LU1,  
SDLCRLC=N,  
SELECT=PRI NT1,  
SETUP=PD I R,  
SLU=SLU2222,  
WRI TER=REMOTE
```

### *Optimizing performance*

---

For documents sent to BARR/SNA RJE-attached printers, you must use the CKPTPAGE JES printer parameter to indicate the number of pages in a chain. XOSF uses only the CKPTPAGE JES printer parameter value for BARR/SNA RJE-attached printers; it does not use the CKPTPAGE IBM JCL keyword value.

To obtain the best performance, use the largest possible value for your site. For example, a 10-page document sent with CKPTPAGE=10 is sent in one chain with one response. However, the same document sent with CKPTPAGE=1 is sent in 10 chains with 10 responses.

## Using BARR/SNA RJE with the 4235 in XPPM mode

---

Standard BARR/SNA RJE support is available for the 4235 printer running in XPPM mode. To use this configuration, complete these procedures.

### Update the printer's profile in XINPARM

---

**Step 1.** Make these entries in the printer's profile:

```
DEVICE=4235,  
CONVERTER=BARRSNA,  
LUTYPE=LU1,  
PCL=META,  
MODE=EBCDIC,  
SLU=SLU2222
```

**Step 2.** Optionally, you can include these printer profile parameters:

- **BUFSIZE.** Use this parameter to specify the buffer size to be used for transmitting data to the BARR/SNA.
- **SELECT.** If multiple printers are connected to the BARR/SNA RJE protocol converter, use this parameter to identify the printer with which this profile is associated.

**Step 3.** Ensure that the CFONTLIB, CFORMLIB, CIMAGELIB, and CLOGOLIB initialization parameters or FONTLIB, FORMLIB, IMAGELIB, and LOGOLIB printer profile parameters name the DD statements for centralized resource libraries. For more information, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

### Set configuration options at the printer console

---

Use these values when setting up the 4235 printer:

**Step 1.** At the System Configuration screen:

- Set the communication protocol to **parallel**.
- Set the emulation mode to **XPPM**.
- Enable **Line Printer Mode**.

**Step 2.** At the Printer Options screen, select **XPPM**.

**Step 3.** At the Document Formatting screen, select **XPPM**. For the parallel interface, set 'JDL' to **DFAULT** and 'JDE' to **DFLT**. For instructions on placing JDL on the 4235 printer, refer to the *Xerox 4235 Laser Printing System Xerox Print Production Mode PDL/DJDE Reference*.

**Step 4.** (Optional) If your data stream includes images, you may also need to set the MP and LP values on the 4235 printer. For more information on the settings required for using the 4235 printer in XPPM mode with XPAF, refer to the *Xerox 4235 Laser Printing System Xerox Print Production Mode PDL/DJDE Reference*.

### Set configuration options at the BARR/SNA RJE screen

Use these values when setting up the BARR/SNA RJE protocol converter:

- Step 1.** Select **Devices and Printers** at the Installation Description screen. At the Devices and Printers screen, complete these steps:
- Select **LPT1**.
  - Select **Use this device**.
  - Select **Choose printer type**. From the displayed list, choose **Generic**.
  - Select **Miscellaneous printer options**. Set the 'Printer performance optimized?' field to **No**.
- Step 2.** Select **Assign Devices** at the Installation Description screen or from the Advanced option on the Operations screen. At the Assign Devices screen, complete these steps:
- Select the proper source device and assign it to destination device LPT1.
    - If you did not include the SELECT parameter in the printer profile, set the source device to **PR1**.
    - If you included the SELECT parameter in the printer profile, use the appropriate source device for that value. For example, if you specified SELECT=PRINT2, set the source device to **PR2**.
  - Select **Receive mode**. From the displayed list, choose **SCS Transparency**.

### Extended BARR/SNA RJE support

To use extended BARR/SNA RJE support with XPAF, perform these tasks using the information that follows:

- Step 1.** Configure the BARR/SNA RJE workstation. Extended support is designated to BARR/SNA RJE software by specifying 'Logon Type?' as **Formatted** in the RJE Description.
- Step 2.** Define the BARR/SNA RJE workstation to XPAF in the initialization parameters.
- Step 3.** Configure an XPAF printer profile for each printer attached to the BARR/SNA RJE. With extended support, LUs are not statically assigned in the printer profiles; therefore, the SLU printer profile parameter is omitted. If multiple printers are connected to the BARR/SNA RJE, use the SELECT printer profile parameter to identify the printer with which each profile is associated.

## Configuring the BARR/SNA RJE workstation

---

For XPAF to communicate with a BARR/SNA RJE-attached printer, specific RJE Description and S/370 Channel-Attached Printer parameters must be set during BARR/SNA RJE installation.

### Setting up the RJE Description

---

The RJE Description contains the parameters needed by the BARR/SNA RJE program and the host system.

Follow this procedure to create an RJE Description:

- Step 1.** From the BARR/SNA RJE workstation, access the Installation Description menu by following the procedure described in the BARR/SNA RJE documentation.
- Step 2.** Select **RJE Description**.
- Step 3.** At the RJE Description screen, complete these steps:
  - a. Set 'RJE System?' to **JES2**. You must enter JES2 irrespective of your actual JES system. BARR/SNA RJE generates JES initialization statements based on this parameter.
  - b. For 'Remote Name,' enter a unique workstation name in the format RMTnnnn.
  - c. Enter a 1- to 8-character logon password. When a BARR/SNA RJE workstation logs on to XPAF, the value in this parameter is compared to the value in the PASSWORD parameter in the member name that was defined in the RMTTBL initialization parameter. If they are different, the logon is rejected, and XPAF issues an error message.
  - d. For 'Printers,' enter the number of PRINT370-attached Xerox printers. BARR/SNA RJE supports up to six PRINT370-attached printers.
  - e. For 'Punches,' enter **0**.
  - f. For 'Readers,' enter **1**. Extended support permits only one reader.
  - g. For 'APPLID,' enter the name of the XPAF VTAM ACBNAME. This value is the same as the ACB parameter in the XINSXOSF member of XINPARM.
  - h. For 'LOGMODE,' enter **BATCH**. This is the BARR/SNA RJE-provided logmode.
  - i. For 'Logon Type?,' enter **Formatted**.

## Defining S/370 printers

---

In addition to the RJE Description parameters, you also must specify PRINT370 parameters. To perform this step, you must have the PRINT370 package, including adapter, cable, terminators, and software installed on your system.

Complete this procedure to define an S/370 printer to BARR/SNA RJE.



---

**NOTE:** Use the default setting for any parameter displayed on a screen but not listed in this section.

---

- Step 1.** Access the Installation Description menu by following the procedure described in the BARR/SNA RJE documentation.
- Step 2.** Select **S/370 Channel-Attached Printers**.
- Step 3.** From the list of printers displayed, select the appropriate printer.
- Step 4.** At the S/370 Channel-Attached Printer screen, set 'Printer type?' to **Xerox laser**.
- Step 5.** Select **Set Printer Options**.
- Step 6.** At the Printer Options screen, set 'Modify advanced printer options?' to **Yes**.
- Step 7.** At the Advanced Printer Options screen, enter these values:
  - Set 'Pad zero length records' to **No**.
  - Set 'Pad zero length Skip to channel 1' to **No**.

## Defining the BARR/SNA RJE workstation to XPAF

---

During workstation configuration, BARR/SNA RJE generates RJE System Definitions based on the settings established in the RJE Description.

Each RJE System Definition consists of two types of statements:

- A Remote Definition statement in the form RMT(*n*).
- One or more Remote Printer statements in the form R(*n*).PR(*m*).  
There is a Remote Printer statement for each remote printer.

The RMTTBL initialization parameter is used to specify the XINPARM member containing the RJE System Definition. The RJE System Definition must be replicated and stored in a member of the XPAF XINPARM library. The definition in XINPARM is read during initialization and used to create the run-time data structures that control the BARR/SNA RJE environment.

## Procedure

---

To define the BARR/SNA RJE workstation to XPAF, follow this procedure:

**Step 1.** Create an RJE System Definition in XINPARM:

- a. From the BARR/SNA RJE workstation, complete the RJE Description to generate the RJE System Definition. For more information, refer to [“Setting up the RJE Description”](#) earlier in this chapter.
- b. From the host, add the RMTTBL initialization parameter to the XINSXOSF member of XINPARM. This parameter specifies the name of the member that will contain the RJE System Definition. For more information about this parameter, refer to [Section Five: XPAF Parameter and Keyword Reference](#).
- c. In XINPARM, create a member with the name you specified in the RMTTBL initialization parameter.
- d. Type a copy of the RJE System Definition you created from the BARR/SNA RJE workstation into the newly created member.
- e. Within the member, edit these parameters included in the Remote Definition statement, if necessary:
  - BUFSIZE
  - COMPRESS
  - NUMPRT
  - NUMRDR
  - SETUP
  - PASSWORD

For more information, refer to step 2 of this procedure. All other parameters in the Remote Definition statement are ignored by XPAF.

- f. Within the member, edit these parameters included in the Remote Printer statements, if necessary:
  - DRAIN
  - SELECT

For more information, refer to step 3 of this procedure. All other parameters in the Remote Printer statements are ignored by XPAF.

**Step 2.** Edit the workstation-specific Remote Definition parameters included in the RMT(*n*) statement:

BUFSIZE	Specifies the buffer size to be used for transmitting data to the BARR/SNA RJE workstation. You can specify a value from 256 to 3840.
	XOSF determines the buffer size according to this processing hierarchy: <ul style="list-style-type: none"> <li>• XOSF's system default buffer size is set to 512.</li> <li>• If it is not set to zero, the DLOGMODE (default logmode table entry) buffer size overrides the default.</li> <li>• If specified, the BUFSIZE value on the RMT(<i>n</i>) statement overrides all other settings.</li> </ul>
COMPRESS	Specifies whether compression will be used to increase line throughput.

NUMPRT	Specifies the number of RJE printers.
NUMRDR	Specifies the number of RJE readers. If this parameter is assigned a value other than zero, XOSF establishes one reader.
SETUP	<p>Enables generation of Peripheral Device Information Record (PDIR). Specify <b>SETUP=PDIR</b>. The PDIR contains this information: date, time, forms, FCB name, copies, volume, number of print lines, and job name. You can use the information in these fields to manage your output and control job routing.</p> <p>The copies field passed in the PDIR contains the value specified for the COPIES IBM JCL keyword. BARR/SNA RJE uses this value to determine the number of copies needed. Also, the output must be directed to the BARR/SNA RJE spool.</p> <p>For example, if a value of three is passed in the PDIR, XPAF will transmit the job to the BARR/SNA RJE workstation once, then the BARR/SNA RJE workstation will send the job to the printer three times. If the JCL for a job does not include the COPIES IBM JCL keyword, no additional copies will be printed.</p> <p>You can also specify <b>SETUP=(PDIR,NOCOPY)</b> to generate a PDIR record without any “copies”. This setting may be used when you want to print the PDIR information but the jobs are too large to be contained on the BARR spool.</p> <p>For the PDIR information to appear on the BARR/SNA print spool display, you must change the “ending of file name” option which appears when a device is assigned to the spool. Refer to the BARR/SNA documentation for instructions.</p>
PASSWORD	Specifies a logon password. Use this parameter to restrict use of the remote connections to authorized users. When a BARR/SNA RJE workstation logs on to XPAF, the value in this parameter is compared to the value in the PASSWORD RJE Description parameter. If they are different, the logon is rejected, and XPAF issues an error message.

**Step 3.** Edit the Remote Printer parameters included in the R(n).PR(m) statement:

DRAIN	Requires an operator command to begin processing. If you include this parameter, XOSF does not start the printer.
SELECT	Specifies the name of the XPAF printer profile member which is associated with this BARR/SNA RJE-attached printer. You must change the value generated by BARR/SNA RJE to the FSA printer name.

### Example

Assume that you will be using extended BARR/SNA RJE support with two centralized printers: PRT123 and PRT456. You want to use a buffer size of 3840 and enable PDIR support.

- Step 1.** From the BARR/SNA RJE workstation, specify this set of parameters in the RJE Description to support two centralized printers.

RJE System: JES2  
 Remote Name: RMT2  
 Printers: 2  
 Punches: 0  
 Readers: 1

BARR/SNA RJE generates this RJE System Definition for JES:

```
RMT(2)    DEVTYPE=LUTYPE1, BUFSIZE=512, COMPACT=YES, PASSWORD=ABC123,
          COMPRESS=YES, CONS=YES, MFORM=J, NUMPRT=2,
          NUMPUN=0, NUMRDR=1
R(2). PR(1) CKPTLINE=66, CKPTPAGE=10, PRWDTH=255, SELECT=PRINT1
R(2). PR(2) CKPTLINE=66, CKPTPAGE=10, PRWDTH=255, SELECT=PRINT2
R(2). RD(1)
```

- Step 2.** From the host, specify **RMTTBL=REMOTE** in the XINSXOSF member of XINPARM.

- Step 3.** In XINPARM, create a member named REMOTE.

- Step 4.** Type a copy of the RJE System Definition you created from the BARR/SNA RJE workstation into the REMOTE member and make these changes:

- Update the BUFSIZE parameter in the Remote Definition statement to specify **BUFSIZE=3840**.
- Add **SETUP=PDIR** to the Remote Definition statement.
- Update each SELECT parameter in a Remote Printer statement to identify the appropriate FSA printer.

When completed, REMOTE contains this RJE System Definition:

```
RMT(2)    DEVTYPE=LUTYPE1, BUFSIZE=3840, COMPACT=YES, PASSWORD=ABC123,
          COMPRESS=YES, CONS=YES, MFORM=J, NUMPRT=2,
          NUMPUN=0, NUMRDR=1, SETUP=PDIR
R(2). PR(1) CKPTLINE=66, CKPTPAGE=10, PRWDTH=255, SELECT=PRT123
R(2). PR(2) CKPTLINE=66, CKPTPAGE=10, PRWDTH=255, SELECT=PRT456
R(2). RD(1)
```

## Configuring the printer profile

---

XPAF uses initialization and/or printer profile parameters to define a BARR/SNA RJE workstation. Review these printer profile parameters to determine if you need to change the settings for printers that are connected to the host via BARR/SNA RJE communications. For more information about these parameters, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

- CONVERTER
- SELECT
- WRITER

### Sample profile

---

This is a sample printer profile for extended BARR/SNA RJE support.

```
*PRT4050
DEVI CE=4050,
CONVERTER=BARRSNA,
LUTYPE=LU1,
SELECT=PRI NT1,
WRI TER=REMOTE
```

## Optimizing performance

---

For documents sent to BARR/SNA RJE-attached printers, you must use the CKPTPAGE JES printer parameter to indicate the number of pages in a chain. XOSF uses only the CKPTPAGE JES printer parameter value for BARR/SNA RJE-attached printers; it does not use the CKPTPAGE IBM JCL keyword value.

To obtain the best performance, use the largest possible value for your site. For example, a 10-page document sent with CKPTPAGE=10 is sent in one chain with one response. However, the same document sent with CKPTPAGE=1 is sent in 10 chains with 10 responses.

## Remote job entry

---

Remote job entry allows JCL stored at the BARR/SNA RJE workstation to be submitted to MVS for processing through XPAF. Output from these jobs can subsequently be routed back to the BARR/SNA RJE workstation for printing. This option applies to extended BARR/SNA RJE support only.

The procedure for using remote job entry is described in *BARR/SNA RJE Version 90, Edition 1: Remote Communications for IBM PC, PS/2, and compatible computers*.

## Setting up XPAF to run with HPIP

---

This section explains each of the steps required to make the High Performance Image Printing (HPIP) software work with XPAF.

Before printing documents using HPIP, ensure that the HPIP device is online and ready on both the PC and the mainframe.

### Checklist for setting up HPIP

---

Follow these steps to set up XPAF for use with HPIP. As you finish each step, place a check in the Completed column to track and record your progress.

Step	Procedure	Completed
1	Modify XINSXOSF initialization parameters	
2	Modify printer profile parameters	
3	Generate the tape I/O addresses	

### Step 1 – Modify XINSXOSF initialization parameters

---

HPIP requires all tapes to be non-labeled. If you are using a tape management system, you may need to specify OPTEXPDT=98000 in the XINSXOSF member of XINPARM to allow the non-labeled tape allocation to occur.

For more information, refer to the OPTEXPDT initialization parameter in [Section Five: XPAF Parameter and Keyword Reference](#).

### Sample XINSXOSF member

---

This figure shows a sample XINSXOSF member with the necessary HPIP parameters specified.

```
*XOSF
ACB=X1372,
ALOGDSN=HPI P. TEST. XLOG,
DJDEOF03=100,
DJDEOF04=0,
DJDESK03=1,
DJDESK04=12,
ESTAE=N,
FORMDEF=A10111,
I DEN03=@@@DJDE,
I DEN04=$X9700$DJDE,
MSGTHMAX=32767,
OPDALLOC=1500,
OPDUNIT=3390,
OPHLQ=HPI P,
OPTEXPDT=98000,          TAPE EXPIRATION
PAPERSI Z=LETTER,
SUBSYS=XOSF,
SYSFCB=STD1,
SYSFLSH=NONE,
SYSFONT=GT15,
SYSUCS=AN,
XLOGDSN=HPI P. TEST. XLOG
```

## Step 2 – Modify printer profile parameters

---

To print documents through HPIP, you must modify these printer profile parameters in XPAF:

- Specify **IMAGEPROC=2** to allow XPAF to perform an alternate AFP image conversion using an enhanced algorithm that reduces CPU time.

When the alternate conversion is specified (IMAGEPROC=2), these restrictions apply:

- Only IM images and a subset of IOCA images are supported. These IOCA images are not supported: CCITT JPEG, Color, Grayscale, Banded, Numbered, and ABIC.
  - The output quality for both simple and complex images may differ from the output produced by specifying IMAGEPROC=1.
  - For centralized printers, all images colorized via the IID structured field are treated as black, regardless of the IID image color value or printer capability.
  - For decentralized and PCL-capable printers, images colorized via the IID structured field will print as created.
  - Ensure that you also specify the correct paper size for the document. If a paper size is not specified correctly, output results may be unpredictable.
  - While IMAGEPROC=2 allows XPAF to process data at a faster rate than normal, it has no effect on the printer processing speed.
- Specify **WRITER=HPIP** to designate that the XPAF high speed HPIP/3422 tape writer will be used as the device writer for this printer.
  - Specify the HPIP/3422 address in the UNIT printer profile parameter.

In addition, you must add these HPIP-specific parameters in the profile of the printer used to print HPIP jobs. In most cases, the default values for these parameters are adequate. However, you may try different values to achieve maximum document throughput.

- Add the HPIP#BLK parameter to indicate the total number of blocks and/or channel command words (CCWs) in a chain.
- Add the HPIP#BUF parameter to indicate the total number of active CCW chains.
- Add the HPIPMBSZ parameter to specify the maximum block size to use per CCW.

For more information on these parameters, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

## Sample profile

This figure shows a sample printer profile with the necessary HPIP parameters specified.

```
*PRT2272
DEVI CE=4890,      4890 WITH GH0
HPI P#BLK=15,      ....# OF BLOCKS PER CCW CHAIN
HPI P#BUF=3,        ....# OF ACTIVE CCW CHAINS
HPI PMBSZ=32000,    ....MAXIMUM BLOCKSIZE PER CCW
IMAGEPROC=2,        USE HIGH SPEED ROTATION AND SCALING
IMAGEMAX0=24,        MAXIMUM IMAGES / OVERLAY EXPECTED
IMAGEMAXS=24,        MAXIMUM IMAGES / PAGE SEGMENT EXPECTED
IMGTYPE=1,          ACTIVATE RESOLUTION CONVERSION
UNI T=921,           3422 UNI T ADDRESS OF PC
WRI TER=HPI P       ACTIVATE HPI P DEVICE WRI TER
```

## Step 3 – Generate the tape I/O addresses

Because the HPIP PC configuration appears as a 3422 to the IBM mainframe, you must create an appropriate IOCP definition. This figure shows the statements you must add to the MVS I/O GEN dataset for supporting an HPIP 3422 tape device (address 470):

```
CNTLUNI T CUNUMBR=470, PATH=44, PROTOCL=D, SHARED=Y, UNI T=3422, *00000101
      UNI TADD=((70, 1))      00000201
I ODEVI CE CUNUMBR=470, UNI T=3422, ADDRESS=(470, 1), STADET=N  00001001
```



**NOTE:** Because the CHANNEL adapter does not presently support data streaming, you must specify PROTOCL=D.

## Setting up XPAF to run as an XPSM client

---

Xerox Print Services Manager (XPSM) is a printing solution for production printing environments. XPAF can act as a client for XPSM by providing a two-way communication link between the host and XPSM software loaded on the RS/6000 at the server sites. This feature is current with the features and functions offered by Xerox Print Services Client for the MVS environment (XPSC-MVS) Version 1 Release 1.

XPAF, as the client, will interface with the host-resident MVS operating system to extract jobs from the JES spooler and transmit them to the appropriate server via the LU 6.2 data communications protocol. Jobs on the JES queue can originate from any batch or online application that can write to SYSOUT.

This section explains how to set up XPAF to run as an XPSM client and attach your centralized printers to the client.

## Creating printer profiles

---

Each XPSM server requires an XPAF printer profile. A printer profile is a site-dependent server definition that is stored as a member of a PDS. This PDS is referenced by the PROFDD initialization parameter each time XPSM is started.

When connections are started between XPAF and the XPSM server, processing proceeds in one of two ways:

- XPSC-compatibility mode, providing all XPSC-MVS 1.1 functions that are relevant to these centralized printers: 4890, 4850, 4635, 4635MX, 4135, 4090, and 4050. This mode enables you to print line-mode and DJDE data streams.
- XPAF full-client mode, providing all XPAF functions that are relevant to these centralized printers: 4890, 4850, 4635, 4635MX, 4135, 4090, and 4050. This mode enables you to print line-mode, DJDE, page-formatted, and AFP data streams.

## XPSC-compatibility mode

---

This example illustrates a printer profile used for XPSC-compatibility mode:

```
*PRTXPSC
DEVI CE=XPSM,           I N XPSC-COMPAT I B I L I T Y  M O D E
SLU=025T2A01,
WRI TER=REMOTE
```

For more information on printer profile parameters, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

## XPAF full-client mode

This example illustrates a printer profile used for XPAF full-client mode:

```
*PRT4850X
DEVI CE=4850,           I N XPAF FULL-CLIENT MODE
FEATURE=DOWNLOAD,
LI BRARY=TABLELIB,
SLU=025T2A01,
XNS=NO,
WRI TER=XPSM
```



**NOTE:** DEVICE is limited to one of these centralized printers when attached to an IBM RS/6000 running XPSM: 4890, 4850, 4635, 4635MX, 4135, 4090, or 4050.

## Defining XPSM capabilities

XPAF contains a set of processing attributes for XPSM known as capabilities. An example of a capability is the ability to process requests for billing records.

XPAF assumes a default set of capabilities. Under some circumstances, you may want to override the default capabilities. You can do this using the appropriate XPAF initialization parameter.

Table 12-1 identifies each alterable XPSM capability, notes its default status, and identifies the initialization parameter used to override the default status. For more information on these initialization parameters, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

Table 12-1. XPAF capabilities defaults

Capability	Default value	Initialization parameter
Accept billing records	Y	XPSMBRS
Accept statistics records	Y	XPSMSRS
Accept operator requests	Y	XPSMORS

## Preparing the network

---

This section describes the VTAM network definitions you must make to connect with XPSM successfully. The sample NCP definitions provided in this section show minimum configurations to support XPSM. Depending on the version of NCP at your site, you may have additional parameters in your definitions.

### Checklist for preparing the network

---

When preparing the network, perform these steps. You must perform steps 1 and 2. If you are connecting to the server over an SDLC network, perform step 3 and skip step 4. If you are connecting to the server over an NCP/token ring interconnection (NTRI), skip step 3 and perform step 4. As each step is completed, enter a check in the Completed column to track and record your progress.

For more information about the initialization and printer profile parameters described in this section, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

Step	Action	Completed
1	Establish the required VTAM application definitions	
2	Assemble a logmode table	
3	If attached via SDLC, define the necessary NCP statements	
4	If attached via NTRI, make the appropriate VTAM definitions	

### Step 1 – Establish the required VTAM application definitions

---

Make sure your VTAM administrator establishes the required VTAM application definitions.

Each XPAF FSS communicating with an XPSM server requires one VTAM APPL. The APPL definition should be defined similar to this:

```
appldef APPL AUTH=(ACQ),EAS=10,APPC=YES,
AUTOS=0,DDRAINL=ALLOW,DMINWNL=5,
DMINWNR=5,DRESPL=ALLOW,DSESLIM=10,
MODETAB=XPSMTAB,SECACPT=CONV
```

The *appldef* you choose as the application name of XPAF must be specified to XPAF via the XPSMAPPL initialization parameter in the XINSXOSF member of XINPARM.

## Step 2 – Assemble a logmode table

Your VTAM administrator should assemble a logmode table (required by XPAF for sessions with the XPSM server) and place the assembled table in your SYS1.VTAMLIB. A sample logmode table is provided in XPFSAMP under member name XPSMMODE. You can use this table or create your own.

If the VTAM administrator uses a mode entry other than the default logon mode (DLOGMOD) name XPSMMODE, the name must be identified to XPAF via the XPSMMODE initialization parameter in the XINSXOSF member of XINPARM.

## Step 3 – Define the necessary NCP statements

Complete this step if any of your XPSM servers are SDLC-attached.

Within your NCP major node, you must define the line, physical unit, and the XPSM server peripheral device LU. This example shows the NCP generation-definition statements required. Note that the DLOGMOD parameter specifies the XPSM sample logon mode name of XPSMMODE.

Each printer defined to the XPSM server must have a corresponding VTAM LU definition in the NCP. The LU names are provided later to XPAF in the SLU printer profile parameter.

This sample shows an SDLC configuration:

```
*****
*      SAMPLE NCP DEFINITIONS FOR SUPPORTING TWO SERVERS      *
*      ON AN SDLC-ATTACHED XPSM FOR THE RS6000                 *
*****

N15LN023  LINE      ADDRESS=(023),                               X
          SPEED=19200

*
N15023SV  SERVICE  ORDER=(N15023PO)
*
*
N15023PO  PU        ADDR=C1,                                     X
          ANS=CONTINUE,                                         X
          ISTATUS=ACTIVE,                                       X
          MODETAB=XPSMMODE,                                     X
          MAXDATA=521,                                          X
          MAXOUT=7,                                             X
          PASSLIM=254,                                          X
          PUTYPE=2,                                             X
          USSTAB=INSTINCT,                                       X
          XID=YES,                                              X
          SRT=(31000, 50)

*
N15023LI  LU        LOCADDR=0, (FOR CONNECTION TO FIRST SERVER) X
          DLOGMOD=XPSMMODE,                                     X
          RESSCB=10,                                           X
          ISTATUS=ACTIVE

N15023LJ  LU        LOCADDR=0, (FOR CONNECTION TO SECOND SERVER) X
          DLOGMOD=XPSMMODE,                                     X
          RESSCB=10,                                           X
          ISTATUS=ACTIVE

*
*
```

## Step 4 – Make the appropriate VTAM definitions

Complete this step if any of your XPSM servers are attached via an NTRI.

For each XPSM server to be supported, you must make the appropriate VTAM definitions. For token ring-based configurations, you must create or modify two VTAM major node definitions:

- The VTAM switched major node
- The NCP major node

Each connection to an XPSM server must have a corresponding VTAM LU definition in the VTAM switched major node and in the NCP. The LU names from the switched major node are later provided to XPSM in the SLU printer profile parameter.

This example shows the definition for switched node:

```
*****
**
**      SWITCHED MAJOR NODE DEFINITIONS FOR ACCESS TO A TOKEN RING.      **
**                                                                           **
*****
      VBUI LD TYPE=SWNET, MAXNO=1, MAXGRP=1
025T2A      PU      ADDR=C1                      X
              MAXDATA=521,                      X
              MAXPATH=1,                        X
              MAXOUT=7,                        X
              PUTYPE=2,                        X
              I DBLK=050,                      X
              I DNUM=00002,                    X
              PASSLI M=7,                      X
              I RETRY=YES,                     X
              USSTAB=I STI NCDT,               X
              MODETAB=XPSMMODE
              PATH  DI ALNO=0004400000000003,   X
              GRPNM=02TRL1G,                   X
              GI D=1,                          X
              USE=YES,                         X
              PI D=1
025T2A01    LU      LOCADDR=0,                  X
              DLOGMOD=XPSMMODE,                X
              RESSCB=10,                       X
              I STATUS=ACTI VE
025T2A02    LU      LOCADDR=0,                  X
              DLOGMOD=XPSMMODE,                X
              RESSCB=10,                       X
              I STATUS=ACTI VE
```

The DIALNO keyword on the PATH statement provides VTAM with the token ring address of the device, and has this format:

DIALNO=*aa**bb*4000*cccccccc*

where

*aa*            The token ring interface coupler (TIC) number on the 3745 communication controller.

*bb*            The system access point address (usually 04).

4000          Code this exactly as shown.

*cccccccc*    The last 4 bytes of the terminal's ring station address.

The GRPNM keyword of the PATH statement is required and must match the label coded for the GROUP ECLTYPE=(LOGICAL,PERIPHERAL) statement in the NCP for the TIC whose physical address is the same as *aa* in the DIALNO parameter (see NCP example).

This example shows the definition for the NCP major node:

```
*****
*      NCP MAJOR NODE STATEMENTS REQUIRED FOR TOKEN RING ATTACHED RS/6000      *
*****
02TRAGRP GROUP ECLTYPE=(PHYSICAL, PERIPHERAL)
*
02TRA1      LINE ADDRESS=(1088, FULL),          TIC POS. # IN CHASSIS      X
            PORTADD=0,                          USER ASSIGNED ID#      X
            LOCADD=4000000000000                TIC RING STATION ADDRESS
02TR1A      PU
02TR1AI O   LU
*
02TRL1G     GROUP ECLTYPE=(LOGICAL, PERIPHERAL),          X
            OWNER=HOWT25,                                  X
            PHYPORT=0,                                      X
            CALL=I NOUT
02T11      LINE
02T11A     PU
02T12      LINE
02T12A     PU
02T13      LINE
02T13A     PU
*
```

## 13. *Setting up decentralized printers*

---

This chapter provides instructions on setting up your decentralized printers to print documents from XPAF.

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

### *Printer connectivity*

---

XPAF can use the interface devices shown in table 13-1 when printing to decentralized printers. Table 13-1 also lists the value you must specify for the CONVERTER printer profile parameter for each interface device.

Table 13-1. Interface device parameter values for decentralized printers

Interface device	CONVERTER printer profile parameter value
Xerox 271 Communication Module	271-1, 271-2
Xerox 274 interface controller	274
Xerox /4 interface controller	4
Xerox /4X interface controller	4X
AGILE 6287 ALLY interface controller	ALLY
AGILE 6287Ultra interface controller	AGILE
AX-7 Cobra+ protocol converter	COBRA
BARR PRINT/GATE	BARRGATE
i-data 3270 C/RS protocol converter	3270C/RS
LPD print server	NONE
MPI Technologies AT02G printer adapter	AT02G
MPI Technologies CTY-2 printer adapter	CTY-2
Xerox Coax/Twinax Option (XCTO)	XCTO-RX, XCTO-US

Refer to “[Printer connectivity](#)” in chapter 2, “[Installation requirements](#)” for the software release levels supported by XPAF for these devices.

## Communication interfaces

---

Depending on which IBM device you want to emulate and which Xerox printer you have, you can use one of these interfaces:

- IBM 3287 Models 1 and 2 with LU0/LU1/LU3 (3270 IDS)
- IBM 3776/3777 Models 3 and 4 (SNA RJE)
- IBM 3767 Models 1, 2 and 3 (Bisynchronous)

For a breakdown of the printers and protocol converters supported by each interface, refer to “[Setting up interface devices](#)” later in this chapter.

## OS/2 support

---

XOSF supports decentralized printers connected to OS/2-based workstations. The OS/2 Extended Services Communications Manager 3270 Emulator allows 3270 sessions to be defined as type “printer.” Using these types of OS/2 3270 sessions, XOSF can deliver documents to the OS/2 spooler for decentralized printers on the workstation’s parallel or serial ports.

## Hardware and software requirements

---

OS/2 support has these hardware/software requirements:

- OS/2 2.0 with Extended Services 1.0
- A Communications Manager Configuration File set up for 3270 emulation and at least one 3270 session defined as type “printer”
- An OS/2 printer object set up with:
  - Device driver=IBMNULLP
  - Printer title containing the words “ASCII PASSTHRU”
- A decentralized printer configured for ISO6937 on the workstation’s serial or parallel port

## XPAF printer profile parameter settings

---

Include these settings in the printer profile for the decentralized printer attached via OS/2:

```
CONVERTER=NONE,  
LUTYPE=LU1,  
MODE=ISO6937
```



**NOTE:** If you specify a value other than LU1 for LUTYPE and ISO6937 for MODE, XPAF changes them to LU1 and ISO6937 respectively.

---

## Displaying JES information on printer console

---

When using the 4700 printer or the 4235 printer, JES job information is displayed on the printer console. This information is displayed for both JES2 and JES3 systems. The information includes:

- Job number
- Job name
- Record count (in parentheses)
- Page count

To enable the display of this information, you must specify these settings on the printer:

- Line Printer Mode = DISABLED
- Status Sheet = ON ERROR

Because the 4235 printer treats certain XES commands as delimiters that separate physical jobs into multiple logical jobs, a single physical job is displayed as multiple jobs.

Example:

In this example, JOB28915 is one physical job that has been separated into multiple logical steps, and JOB28932 is a composed text AFP job.

```
JOB28915  JOBNAM01  (87)
JOB28915  JOBNAM01  (87)
JOB28915  JOBNAM01  (87)
JOB28915  JOBNAM01  (87)
JOB28932  JOBNAM02   4
```

## Preparing resources

If you require the country-specific variants of the R03 fonts to print on a decentralized or PCL-capable printer, you must convert them from the centralized font library using XOAF or batch processing.

The following JCL is similar to the UFTCONV member in XPFSAMP. You can use this job to assist you in your font conversion. Use your standard job card information and make any necessary modifications to the JCL as described in the comments.

```
//job-name JOB job-information
//*
/*      RUN UFTCONV - GENERATE CONVERT XFONT COMMANDS
/*
/*      This job will compare your CFONTLIB and DFONTLIB and generate
/*      CONVERT XFONT commands for any fonts found in CFONTLIB that are
/*      not also in DFONTLIB. The resulting command file should then be
/*      edited to include only those fonts you want converted. The
/*      resulting file is then used as XOAIN input to XOAF Batch to do
/*      the font conversion.
/*
/*
/* * * * * *
/*
/* 1. Modify the following DD statements to point to your XPAF
/*    libraries.
/*
/* 2. SYSUT2 should point to an 80-byte LRECL file or PDS member that
/*    will eventually be input to XOAF Batch processing.
/*
/* 3. Submit this job. The SYSUT2 output will be CONVERT commands
/*    for XOAF Batch.
/*
/* 4. Edit the SYSUT2 file and delete any commands for fonts that you
/*    do not want converted.
/*
/* 5. Use your XOAF Batch job to read the edited SYSUT2 file as
/*    XOAIN.
/*
/* * * * * *
/*
/*      =====> EXEC UFTCONV <=====
//UFTCONV EXEC PGM=UFTCONV, REGION=6M
//STEPLIB DD DISP=SHR, DSN=prefix.XPFLIB      <==YOUR XPAF LINKLIB
//CFONTLIB DD DISP=SHR, DSN=prefix.CFONTLIB    <==YOUR XPAF CFONTLIB
//DFONTLIB DD DISP=SHR, DSN=prefix.DFONTLIB    <==YOUR XPAF DFONTLIB
//SYSUT2  DD DISP=SHR, DSN=prefix.JCL(XFONT)  <==TO BE XOAF BATCH INPUT
//*SYSUT2  DD SYSOUT=X
//
```

## Setting up interface devices

---

Decentralized printer setup includes:

- Selecting an interface device with the correct communication interface for the MVS environment being emulated.
- Setting switches on cartridges or internally via the printer console. XPAF requires specific switch settings in the interface device, as well as in the printer.
- Setting printer profile parameters to define the communication environment.

These steps are addressed for each interface device.

### Printer interface/device emulation

---

When connected to the host via one of these interface devices, the decentralized printers emulate the IBM 3287, IBM 3776/3777, or IBM 3767 interface. Except where noted, you can connect only one printer per interface device.

Printers with bisynchronous interfaces may be connected to the mainframe through a 3x75 front-end processor (FEP) running NTO, if required. Two printers which may use this connection method are the 3700 and 4235 printers.

Table 13-2 shows the various interface devices that are supported by the decentralized printers. It also shows which device emulation method is used.

Table 13-2. Supported interface devices and emulation modes for decentralized printers

Printer	Supported interface devices	IBM device emulation
4700 II	274 Interface Controller	3287
	/4 Interface Controller	3287
	/4X Interface Controller	3287
	AGILE 6287 ALLY <sup>1</sup>	3287
	AGILE 6287Ultra <sup>1</sup>	3287
	AX-7 Cobra+	3287
	BARR PRINT/GATE <sup>2</sup>	3287
	i-data 3270 C/RS	3287
	Modem connection	3776/3777
	MPI Technologies AT02G	3287
	MPI Technologies CTY-2 <sup>1,3</sup>	3287
4235 (XDPM mode)	274 Interface Controller	3287
	/4 Interface Controller	3287
	/4X Interface Controller	3287
	AGILE 6287 ALLY <sup>1</sup>	3287
	AGILE 6287Ultra <sup>1</sup>	3287
	AX-7 Cobra+	3287
	BARR PRINT/GATE <sup>2</sup>	3287
	BARR/SNA RJE <sup>4</sup>	3776/3777
	i-data 3270 C/RS	3287
	Modem connection	3776/3777
	MPI Technologies AT02G	3287
	MPI Technologies CTY-2 <sup>1,3</sup>	3287

Table 13-2. Supported interface devices and emulation modes for decentralized printers (Continued)

Printer	Supported interface devices	IBM device emulation
4213 II	274 Interface Controller	3287
	/4 Interface Controller	3287
	AGILE 6287 ALLY <sup>1</sup>	3287
	AGILE 6287Ultra <sup>1</sup>	3287
	AX-7 Cobra+	3287
	i-data 3270 C/RS	3287
	MPI Technologies AT02G	3287
	MPI Technologies CTY-2 <sup>1,3</sup>	3287
	Xerox Coax/Twinax Option (XCTO)	3287
4197 MICR	274 Interface Controller	3287
	/4 Interface Controller	3287
	/4X Interface Controller	3287
	AGILE 6287 ALLY <sup>1</sup>	3287
	AGILE 6287Ultra <sup>1</sup>	3287
	AX-7 Cobra+	3287
	BARR PRINT/GATE <sup>2</sup>	3287
	i-data 3270 C/RS	3287
	MPI Technologies AT02G	3287
	MPI Technologies CTY-2 <sup>1,3</sup>	3287

Table 13-2. Supported interface devices and emulation modes for decentralized printers (Continued)

Printer	Supported interface devices	IBM device emulation
4045 (50/150)	271 Communications Module <sup>5</sup>	3776/3777
	274 Interface Controller	3287
	/4 Interface Controller	3287
	/4X Interface Controller	3287
	AGILE 6287 ALLY <sup>1</sup>	3287
	AGILE 6287Ultra <sup>1</sup>	3287
	AX-7 Cobra+	3287
	BARR PRINT/GATE <sup>2</sup>	3287
	i-data 3270 C/RS	3287
	Integral SNA board	3776/3777
	MPI Technologies AT02G	3287
	MPI Technologies CTY-2 <sup>1,3</sup>	3287
4030 II	274 Interface Controller	3287
	/4 Interface Controller	3287
	/4X Interface Controller	3287
	AGILE 6287 ALLY <sup>1</sup>	3287
	AGILE 6287Ultra <sup>1</sup>	3287
	AX-7 Cobra+	3287
	BARR PRINT/GATE <sup>2</sup>	3287
	i-data 3270 C/RS	3287
	MPI Technologies AT02G	3287
	MPI Technologies CTY-2 <sup>1,3</sup>	3287

Table 13-2. Supported interface devices and emulation modes for decentralized printers (Continued)

Printer	Supported interface devices	IBM device emulation
3700	271 Communications Module	3776/3777
	274 Interface Controller	3287
	/4 Interface Controller	3287
	/4X Interface Controller	3287
	AGILE 6287 ALLY <sup>1</sup>	3287
	AGILE 6287Ultra <sup>1</sup>	3287
	AX-7 Cobra+	3287
	BARR PRINT/GATE <sup>2</sup>	3287
	i-data 3270 C/RS	3287
	Modem connection via integral SNA board	3776/3777
	MPI Technologies AT02G	3287
	MPI Technologies CTY-2 <sup>1,3</sup>	3287
	Network Terminal Option	3767

<sup>1</sup> Does not support LU0 communication protocol.

<sup>2</sup> Must set printer profile parameters to LUTYPE=LU1 and MODE=ISO6937.

<sup>3</sup> Does not support MODE=EBCDIC character code.

<sup>4</sup> Only when running the 4235 in XDPM mode.

<sup>5</sup> You can connect two printers per interface device.

## IBM 3287 interface

---

The IBM 3287 emulation is based on the 3270 Information Display System with coax connections. In this environment, the protocol converters use the Centronics interface output.

Except where noted, printer switch settings are made at the printer console.

## 274 protocol converter

---

### Switch settings

---

Use three switchbanks:

Switchbank	Settings
SW1	All but BIT3 (US paper size) should be OFF. For ASCII mode, BIT6 should be ON.
SW2	All bits should be OFF.
SW3	All bits should be OFF.

### XPAF printer profile parameter settings

---

To use the 274 protocol converter, set the CONVERTER printer profile parameter value to **274**.

## /4 and /4X interface controllers

---

### Switch settings

---

These controllers have software-controlled switch settings. XPAF makes the necessary settings from the expected manufacturer default settings. If you change the settings, reset them to their defaults before installing XPAF.

### XPAF printer profile parameter settings

---

To use the /4 interface controller, set the CONVERTER printer profile parameter value to **4**.

To use the /4X interface controller, set the CONVERTER printer profile parameter value to **4X**.

## *AGILE 6287 ALLY interface controller*

---

### *Switch settings*

---

The AGILE 6287 ALLY is shipped from the manufacturer with a set of default switch settings. When using the interface controller with XPAF, use this default configuration. XPAF makes the necessary settings from the expected manufacturer default settings. No changes are required.

### *XPAF printer profile parameter settings*

---

To use the AGILE 6287 ALLY printer interface controller, set the CONVERTER printer profile parameter value to **ALLY**.

### *Other requirements*

---

After you first install an AGILE 6287 ALLY or reset the unit to factory defaults, you must invoke mode 3 on the interface controller or power the unit off and back on to effect the change. Do this after starting the printer and downloading the configuration string.

## *AGILE 6287Ultra protocol converter*

---

### *Switch settings*

---

XPAF uses the switch settings provided in the manufacturer's documentation with the exception of one setting:

- Switch 7 in bank B must be set **ON**.

### *XPAF printer profile parameter settings*

---

To use the AGILE 6287Ultra protocol converter, set the CONVERTER printer profile parameter value to **AGILE**.

### *Other requirements*

---

After you first install an AGILE 6287Ultra or change the communication mode (for example, LU1 to LU3 or EBCDIC to ASCII), you must press the RESET button on the front of the protocol converter to effect the change. Do this after starting the printer and downloading the configuration string.

## *AX-7 Cobra+ protocol converter*

---

### *Switch settings*

---

The protocol converter has software-controlled switch settings. At start-up, XOSF makes the necessary settings from the expected manufacturer default settings.

On the front panel, set the rotary switch to position 0. Ensure that both the POWER and SYSTEM indicators are lit.

### *XPAF printer profile parameter settings*

---

To use the AX-7 Cobra+ protocol converter, set the CONVERTER printer profile parameter value to **COBRA**.

### *Firmware requirements*

---

This protocol converter must use an EPROM containing the AX-7 Cobra+/Xerox firmware (available from the protocol converter manufacturer).

## *BARR PRINT/GATE support*

---

XOSF supports decentralized printers connected to a Local Area Network using BARR PRINT/GATE. XOSF and the BARR PC use a VTAM SDLC line for communication. BARR PRINT/GATE supports two LAN protocols:

- Novell
- TCP/IP

### *Hardware and software requirements*

---

The hardware and software requirements depend on your network configuration. Because numerous LAN protocols are supported, you must contact Barr Systems, Inc. to determine the exact requirements for your site.

### *XPAF printer profile parameter settings*

---

Include these settings in the decentralized printer's profile:

```
CONVERTER=BARRGATE,  
LUTYPE=LU1,  
MODE=ISO6937,  
SLU=SLU2222,  
WRITER=REMOTE
```

These restrictions apply:

- MODE=EBCDIC is not supported.
- You cannot use the BUFSIZE, SDLCRLC, SELECT, or SETUP printer profile parameters with BARR PRINT/GATE. These parameters only apply to BARR/SNA RJE support.

### BARR PRINT/GATE settings

The Installation Description contains the parameters needed by the BARR PRINT/GATE program and the host system. For more information on the BARR PRINT/GATE installation, refer to either *BARR PRINT/GATE* or *BARR PRINT/GATE for TCP/IP*.

Follow this procedure to create an Installation Description:

- Step 1.** Access the Installation Description menu following the procedure described in the BARR PRINT/GATE documentation.
- Step 2.** At the Installation Description menu, select 3270 Printers.
  - a. Set 'Number of 3270 Printers' to the number of printers you will be attaching to BARR PRINT/GATE.
  - b. Set 'LUNAME' to the VTAM LU name for each printer.
- Step 3.** At the Installation Description menu, select **Communications Link**. Set the SDLC options according to your system configuration.
- Step 4.** At the Installation Description menu, select **Devices and Printers: LPT1, LPT2, LPT3, COM1, COM2**.
  - a. On the Devices and Printers screen, select the 'send to network' option appropriate for your site:
    - If you are connecting 12 or fewer printers, select **NET1-12**.
    - If you are connecting 13 to 24 printers, select **NET13-24**.
  - b. On the NET Devices screen, select the **NET $n$**  field for the printer to connect.
  - c. Select **Network Printer Options**.
  - d. On the Network Printer Options screen, set the network type to a value appropriate for your system configuration.
  - e. On the Choose Printer Type screen, select **Generic**.
  - f. Repeat b through e for each printer to connect.
- Step 5.** At the Installation Description menu, select **Assign Devices**.
  - a. Set the source to the printer defined at the 3270 Printers screen.
  - b. Set the destination to **NET $n$** , where  $n$  is the printer are currently assigning.
  - c. Set the receive mode to **ASCII**.

## *i-data 3270 C/RS protocol converter*

---

The i-data 3270 C/RS protocol converter has two processing modes: XES and PCL.

### *Switch settings*

---

The protocol converter has software-controlled switch settings. At start-up, XOSF makes the necessary settings from the expected manufacturer default settings.

A toggle switch on the protocol converter determines which processing mode to use. Set the toggle switch to **B** to indicate XES mode.

### *XPAF printer profile parameter settings*

---

To use the i-data 3270 C/RS protocol converter, set the CONVERTER printer profile parameter value to **3270C/RS**.

### *Firmware requirements*

---

This protocol converter is at a minimum firmware level of version 121.010. It requires no additional setup for use with decentralized printers.

## *MPI AT02G protocol converter*

---

### *Switch settings*

---

The MPI AT02G does not have switches, therefore no switch settings are required.

### *XPAF printer profile parameter settings*

---

To use the MPI AT02G protocol converter, set the CONVERTER printer profile parameter value to **AT02G**.

## *MPI CTY-2 protocol converter*

---

### *Switch settings*

---

The protocol converter has software-controlled switch settings. At start-up, XOSF makes the necessary settings from the expected manufacturer default settings.

### *XPAF printer profile parameter settings*

---

To use the MPI CTY-2 protocol converter, set the CONVERTER printer profile parameter value to **CTY-2**, and set the MODE printer profile parameter value to **ISO6937**.



**NOTE:** The MODE=EBCDIC printer profile parameter setting is not valid for CONVERTER=CTY-2. XOSF sets the MODE to ISO6937; if you specify any other value for MODE in the printer profile, that value is overridden.

---

### *Firmware requirements*

---

The MPI CTY-2 is at a minimum firmware level of version 5.01. It requires no additional setup for use with decentralized printers.

### *Xerox Coax/Twinax Option (XCTO)*

---

To set up the XCTO interface card for use with XPAF, follow the instructions provided in the *Xerox 4213 Laser Printing Systems User Guide*. Pay careful attention to those sections describing Xerox 4045 model 20 emulation and saving the configuration.

### *XPAF printer profile parameter settings*

---

If you use the 4213 II printer in XCTO mode with the SPECIAL FEATURE value set to STM XEROX, set the CONVERTER printer profile parameter value to **XCTO-US**.

If you use the 4213 II printer in XCTO mode with the SPECIAL FEATURE value set to STM RANK XEROX, set the CONVERTER printer profile parameter value to **XCTO-RX**.

### *Xerox 4045 printer—Model 20/120*

---

The 4045 Model 20/120 has firmware that allows it to be connected directly to the 3270 controller. This firmware provides IBM 3287 interface emulation.

### *Printer settings*

---

These settings are made on a configuration cartridge.

	Switch	Setting	Function
<b>Switch Bank A</b>	1	ON	No ending blanks
	2	ON	No null lines
	3	OFF	GE to error code
	4	ON	Enable Special Transparency Mode
	5	OFF	CR/LF not inserted
	6	OFF	EM to CR/LF not converted
	7	OFF	Single spacing
	8	OFF	No custom cartridge
<b>Switch Bank B</b>	1	ON	Set language switches as applicable
	2	ON	Set language switches as applicable
	3	ON	Set language switches as applicable
	4	ON	Set language switches as applicable
	5	ON	Status sheet
	6	ON	Chime
	7	OFF	Default font is resident landscape
	8	ON	
<b>Switch Bank C</b>	1	OFF	The settings of this entire switch bank define the number of lines per page. Setting all switches to OFF allows XPAF to control the page.
	2	OFF	
	3	OFF	
	4	OFF	
	5	OFF	
	6	OFF	
	7	OFF	
	8	OFF	

	Switch	Setting	Function
<b>Switch Bank D</b>	1	ON	No CR/LF at MPP
	2	ON	Eject local copy page
	3	ON	Eject host copy page
	4	ON	11 minute timeout
	5	OFF	No PCIA dump
	6	OFF	Default auto form feed
	7	OFF	Unused
	8	OFF	Fonts not rotated

### XPAF printer profile parameter settings

If you use the 4045/120 printer operating with firmware level 4.2.0 or 4.2.2, set the CONVERTER printer profile parameter value to **4045-0**.

If you use the 4045/120 printer operating with firmware level 4.2.1, set the CONVERTER printer profile parameter value to **4045-1**.

## IBM 3776/3777 interface

Depending on the connection method, some Xerox printers may appear to emulate the IBM 3776/3777 interface:

- The 4700 II, 4235, and 3700 printers may appear as 3776/3777 devices when interfaced to the host through a serial SNA connection made with a modem.
- The 4045 and 3700 printers may appear as 3776/3777 devices when connected through the 271 CM protocol converter with the Dataproducts interface output. You can connect two 4045 or 3700 printers to one 271 CM.

## 271 Communications Module

### Switch settings: Centronics

Make the settings via the 271 Control Terminal. Most settings on this device are made to interface with the communication controller; however, XPAF requires these settings:

BUFFER SIZE = 512 (bytes)

DEVICE TYPE = *printer-name*

CHARACTER CODE =  $\left\{ \begin{array}{l} \text{ASCII} \\ \text{EBCDIC} \end{array} \right\}$

### Switch settings: Dataproducts

---

These are the values for Dataproducts:

Setting	Value
Character code set	EBCDIC (U.S. English)
Line-ending character	CR & LF
Interface	Dataproducts
Logic level	Positive Logic
Single shift out	Disabled
Process nulls	Enabled

### XPAF printer profile parameter settings

---

If your printer is interfaced through a 271 communication module on port 1, set the CONVERTER printer profile parameter value to **271-1**.

If your printer is interfaced through a 271 communication module on port 2, set the CONVERTER printer profile parameter value to **271-2**.

### Integral SNA board settings

---

Make the settings via the System Configuration/Interface Setup for SNA/SDLC option on the printer console for the 4700 II, 4235, or 3700 printers.

### Settings: SNA/SDLC

---

Setting	Value
SDLC Channel	Channel B (3700 only)
Interface mode	DTE
SDLC Data Encoding Mode	Must match NCP
SDLC XID code	NCP address
SDLC window limit	7
Disconnect timer interval	60
Page Mode	4700 II: Xerox mode 4235: Xerox mode 3700: 3700 pass-through
Character code set	EBCDIC (U.S. English)

Setting	Value
Application Identification	Not relevant to XPAF
Mode entry table name	Not relevant to XPAF
Data field	Not relevant to XPAF
Auto logon	Disabled
SNA trace	Disabled

### XPAF printer profile parameter settings

To use the Integral SNA board, set the CONVERTER printer profile parameter value to **SNA**.

## BARR/SNA RJE

Standard BARR/SNA RJE support is available for the 4235 printer running in XDPM mode. To use this configuration, complete these steps.

### Switch settings

Use these values when setting up the BARR/SNA RJE protocol converter:

- Step 1.** At the Installation Description screen, select **Devices and Printers**.
- Step 2.** At the Devices and Printers screen, complete these steps:
  - a. Select **LPT1**.
  - b. Select **Use this device**.
  - c. Select **Choose printer type**. From the displayed list, choose **Generic**.
  - d. Select **Miscellaneous printer options**. Set the 'Printer performance optimized?' field to **No**. Select **Assign Devices** at the Installation Description screen or from the Advanced option on the Operations screen.
- Step 3.** At the Assign Devices screen, complete these steps:
  - a. Select the proper source device and assign it to destination device LPT1.
    - If you did not include the SELECT parameter in the printer profile, set the source device to **PR1**.
    - If you included the SELECT parameter in the printer profile, use the appropriate source device for that value. For example, if you specified SELECT=PRINT2, set the source device to PR2.
  - b. Select **Receive mode**. From the displayed list, choose **SCS Transparency**.

### *XPAF printer profile parameter settings*

---

Make these entries in the printer profile:

```
DEVICE=4235,  
CONVERTER=SNA,  
LUTYPE=LU1,  
PCL=XES,  
MODE=EBCDIC
```



---

**NOTE:** When the CONVERTER=SNA printer profile parameter setting is specified, you also must use the default setting of MODE=EBCDIC. The MODE=ISO6937 printer profile parameter setting is not valid for CONVERTER=SNA.

---

Optionally, you can include these printer profile parameters:

- **SELECT.** If multiple printers are connected to the BARR/SNA RJE protocol converter, use this parameter to identify the printer with which this profile is associated.
- **BUFSIZE.** Use this parameter to specify the buffer size to be used for transmitting data to BARR/SNA.

Ensure that the DFONTLIB, DFORMLIB, and DIMAGELIB initialization parameters or FONTLIB, FORMLIB, and IMAGELIB printer profile parameters name the DD statements for decentralized resource libraries. For more information, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

### *Printer settings*

---

Follow these steps when setting up the 4235 printer:

- Step 1.** At the SYSTEM CONFIGURATION screen:
- a. Set the communication protocol to **parallel**.
  - b. Set the emulation mode to **XDPM**.
  - c. Enable **LINE PRINTER MODE**.
- Step 2.** At the PRINTER OPTIONS screen, select **XDPM**.

## *IBM 3767 interfaces via NTO*

---

The Network Terminal Option (NTO) is software installed as part of the 37xx Communication Controller. The 3780 BSC adapter is built into the 3700 decentralized printer. The host sends data for a 3776/3777 printer environment.

### *XPAF printer profile parameter settings*

---

To use the NTO interface software, set the CONVERTER printer profile parameter value to **NTO**.

## 4045 printer—Model 50/150 printer settings

---

The 4045 Model 50/150 printer requires certain printer settings depending on what type of configuration cartridge you are using. This section shows the printer settings for Centronics and Dataproducts configuration cartridges.

### Centronics, 2700 mode, EBCDIC, SCS or DSC

---

These settings are made on a configuration cartridge. EBCDIC can be either SCS or DSC. Change the D4 switch to ON to create the DSC.

	Switch	Setting	Function
<b>Switch Bank A</b>	1	OFF	Parallel
	2	OFF	2700 mode
	3	OFF	Disable line ending decisions
	4	OFF	
	5	ON	8-bit data
	6	OFF	EBCDIC encoding
	7	ON	EBCDIC encoding
	8	OFF	No custom cartridge
<b>Switch Bank B</b>	1	ON	Set language switches as applicable
	2	ON	Set language switches as applicable
	3	ON	Set language switches as applicable
	4	ON	Set language switches as applicable
	5	ON	Status sheet
	6	ON	Chime
	7	OFF	Default font is resident landscape
	8	ON	

	Switch	Setting	Function
<b>Switch Bank C (Serial async only)</b>	1	OFF	XON-XOF disabled
	2	OFF	ETX-ACK disabled
	3	OFF	RDY-DTR disabled
	4	OFF	Baud rate
	5	OFF	Baud rate
	6	OFF	Baud rate
	7	OFF	Unused
	8	OFF	Disable meter data
<b>Switch Bank D</b>	1	OFF	Centronics interface
	2	OFF	Normal data
	3	OFF	VFU not used
	4	OFF	SNA environment
	5	OFF	(630 mode only)
	6	OFF	(630 mode only)
	7	OFF	(630 mode only)
	8	OFF	Fonts not rotated

**Centronics, 2700 mode, ISO 6937**

These settings are made on a configuration cartridge.

	Switch	Setting	Function
<b>Switch Bank A</b>	1	OFF	Parallel
	2	OFF	2700 mode
	3	OFF	Disable line ending decisions
	4	OFF	
	5	ON	8-bit data
	6	OFF	ISO encoding
	7	OFF	ISO encoding
	8	OFF	No custom cartridge
<b>Switch Bank B</b>	1	ON	Set language switches as applicable
	2	ON	Set language switches as applicable
	3	ON	Set language switches as applicable
	4	ON	Set language switches as applicable
	5	ON	Status sheet
	6	ON	Chime
	7	OFF	Default font is resident landscape
	8	ON	
<b>Switch Bank C (Serial async only)</b>	1	OFF	XON-XOF disabled
	2	OFF	ETX-ACK disabled
	3	OFF	RDY-DTR disabled
	4	OFF	Baud rate
	5	OFF	Baud rate
	6	OFF	Baud rate
	7	OFF	Unused
	8	OFF	Disable meter data

	Switch	Setting	Function
<b>Switch Bank D</b>	1	OFF	Centronics interface
	2	OFF	Normal data
	3	OFF	VFU not used
	4	OFF	SNA environment
	5	OFF	(630 mode only)
	6	OFF	(630 mode only)
	7	OFF	(630 mode only)
	8	OFF	Fonts not rotated

### Dataproducts, 2700 mode, EBCDIC

These settings are made on a configuration cartridge.

	Switch	Setting	Function
<b>Switch Bank A</b>	1	OFF	Parallel
	2	OFF	2700 mode
	3	OFF	Disable line ending decisions
	4	OFF	
	5	ON	8-bit data
	6	OFF	EBCDIC encoding
	7	ON	EBCDIC encoding
	8	OFF	No custom cartridge
<b>Switch Bank B</b>	1	ON	Language selection is U.S. English
	2	ON	
	3	ON	
	4	ON	
	5	ON	Status sheet
	6	ON	Chime
	7	OFF	Default font is resident portrait
	8	ON	

	Switch	Setting	Function
<b>Switch Bank C (Serial async only)</b>	1	OFF	XON-XOF disabled
	2	OFF	ETX-ACK disabled
	3	OFF	RDY-DTR disabled
	4	OFF	Baud rate
	5	OFF	Baud rate
	6	OFF	Baud rate
	7	OFF	Unused
	8	OFF	Disable meter data
<b>Switch Bank D</b>	1	ON	Dataproducs interface
	2	OFF	Normal data
	3	OFF	VFU not used
	4	OFF	SNA environment
	5	OFF	(630 mode only)
	6	OFF	(630 mode only)
	7	OFF	(630 mode only)
	8	ON	Fonts rotated

Dataproducts, 2700 mode, ASCII

These settings are made on a configuration cartridge.

	Switch	Setting	Function
<b>Switch Bank A</b>	1	OFF	Parallel
	2	OFF	2700 mode
	3	OFF	Disable line ending decisions
	4	OFF	
	5	ON	8-bit data
	6	ON	ISO encoding
	7	OFF	ISO encoding
	8	OFF	No custom cartridge
<b>Switch Bank B</b>	1	ON	Set language switches as applicable
	2	ON	Set language switches as applicable
	3	ON	Set language switches as applicable
	4	ON	Set language switches as applicable
	5	ON	Status sheet
	6	ON	Chime
	7	OFF	Default font is resident portrait
	8	ON	
<b>Switch Bank C (Serial async only)</b>	1	OFF	XON-XOF disabled
	2	OFF	ETX-ACK disabled
	3	OFF	RDY-DTR disabled
	4	OFF	Baud rate
	5	OFF	Baud rate
	6	OFF	Baud rate
	7	OFF	Unused
	8	OFF	Disable meter data

	Switch	Setting	Function
<b>Switch Bank D</b>	1	ON	Dataproductions interface
	2	OFF	Normal data
	3	OFF	VFU not used
	4	OFF	SNA Environment
	5	OFF	(630 mode only)
	6	OFF	(630 mode only)
	7	OFF	(630 mode only)
	8	OFF	Fonts not rotated

## Sending TCP batch print jobs to decentralized printers

Follow this procedure to send a document to a decentralized printer using the TCP/LPR protocol.

- Step 1.** Ensure that your TCP JCL dataset has been created and contains your customized XTCPLPRJ member.
- Step 2.** Ensure that a printer profile has been created for each printer you will be sending documents to using the TCP/LPR protocol, and that it contains all the necessary TCP-related printer profile parameters.
- Step 3.** Send your document to the destination printer. XPAF will save the document to a disk dataset, and use the specified TCP JCL member to submit a batch job that will send it to the destination printer. When the dataset has been successfully transmitted, XPAF deletes it.

If you have not correctly specified the TCP dataset and JCL member in your printer's profile, XPAF will issue an error message. To print the dataset, you must manually LPR it. For example, if you are using IBM TCP/LPR, you could issue this LPR command:

```
LPR 'dataset-name(member-name)' (AT ip-address PRINTER  
queue-name FILTER L BINARY
```

Refer to IBM's *TCP/IP for MVS: User's Guide* for more information about this and other LPR commands you can use. If you are using another vendor's TCP software, refer to their documentation for valid command syntax.

For more information on TCP batch printing, refer to chapter 10, "[Using XPAF extended features](#)."

# 14. *Setting up PCL-capable printers*

This chapter provides instructions for setting up your PCL-capable printers to print documents from XPAF.

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

## *Printer connectivity*

XPAF can use the interface devices shown in table 14-1 when printing to PCL-capable printers. Table 14-1 also lists the value you must specify for the CONVERTER printer profile parameter for each interface device.

Table 14-1. Interface device parameter values for PCL-capable printers

Interface device	CONVERTER printer profile parameter value
Xerox /4X interface controller	4X
AGILE 6287 ALLY interface controller	ALLY
AGILE 6287Ultra interface controller	AGILE
BARR PRINT/GATE	BARRGATE
BARR/PRINT for TCP/IP	BARRTCP
i-data 3270 C/RS protocol converter	3270C/RS
i-data Coax PCL interface card	XCO
LPD print server	NONE
MPI Technologies CTY-2 printer adapter	CTY-2
Xerox DocuPrint network interface card (NIC)	NONE

Refer to “[Printer connectivity](#)” in chapter 2, “[Installation requirements](#)” for the software release levels supported by XPAF for these devices.

## Communication interfaces

---

For PCL-capable printers, use the IBM 3287, Models 1 and 2, with LU0/LU1/LU3 (3270 IDS) as the communications interface. No other communications interfaces are supported.

## OS/2 support

---

XOSF supports PCL-capable printers connected to OS/2-based workstations. The OS/2 Extended Services Communications Manager 3270 Emulator allows 3270 sessions to be defined as type "printer." Using these types of OS/2 3270 sessions, XOSF can deliver documents to the OS/2 spooler for PCL-capable printers on the workstation's parallel or serial ports.

## Hardware and software requirements

---

OS/2 support has these hardware/software requirements:

- OS/2 2.0 with Extended Services 1.0
- A Communications Manager Configuration File set up for 3270 emulation and at least one 3270 session defined as type "printer"
- An OS/2 printer object set up with:
  - Device driver=IBMNULLP
  - Printer title containing the words "ASCII PASSTHRU"
- A PCL-capable printer configured for ISO6937 on the workstation's serial or parallel port

## Preparing resources

If you require the country-specific variants of the R03 fonts to print on a decentralized or PCL-capable printer, you must convert them from the centralized font library using XOAF or batch processing.

The following JCL is similar to the UFTCONV member in XPFSAMP. You can use this job to assist you in your font conversion. Use your standard job card information and make any necessary modifications to the JCL as described in the comments.

```
//job-name JOB job-information
//*
//*      RUN UFTCONV - GENERATE CONVERT XFONT COMMANDS
//*
//*      This job will compare your CFONTLIB and DFONTLIB and generate
//*      CONVERT XFONT commands for any fonts found in CFONTLIB that are
//*      not also in DFONTLIB. The resulting command file should then be
//*      edited to include only those fonts you want converted. The
//*      resulting file is then used as XOAIN input to XOAF Batch to do
//*      the font conversion.
//*
//* * * * *
//*
//* 1. Modify the following DD statements to point to your XPAF
//*      libraries.
//*
//* 2. SYSUT2 should point to an 80-byte LRECL file or PDS member that
//*      will eventually be input to XOAF Batch processing.
//*
//* 3. Submit this job. The SYSUT2 output will be CONVERT commands
//*      for XOAF Batch.
//*
//* 4. Edit the SYSUT2 file and delete any commands for fonts that you
//*      do not want converted.
//*
//* 5. Use your XOAF Batch job to read the edited SYSUT2 file as
//*      XOAIN.
//*
//* * * * *
//*
//*      =====> EXEC UFTCONV <=====
//UFTCONV EXEC PGM=UFTCONV, REGION=6M
//STEPLIB DD DISP=SHR, DSN=prefix.XPFLIB <==YOUR XPAF LINKLIB
//CFONTLIB DD DISP=SHR, DSN=prefix.CFONTLIB <==YOUR XPAF CFONTLIB
//DFONTLIB DD DISP=SHR, DSN=prefix.DFONTLIB <==YOUR XPAF DFONTLIB
//SYSUT2 DD DISP=SHR, DSN=prefix.JCL(XFONT) <==TO BE XOAF BATCH INPUT
//*SYSUT2 DD SYSOUT=X
//
```

## Setting up interface devices

---

PCL-capable printer setup includes:

- Selecting an interface device.
- Setting switches on cartridges or internally via the printer console. XPAF requires specific switch settings in the interface device, as well as in the printer.
- Setting printer profile parameters to define the communication environment.

These steps are addressed for each interface device.

### Printer interface/device emulation

---

Table 14-2 lists, by printer, the interface devices that emulate the IBM 3287 interface. The emulation is based on the 3270 Information Display System with coax connections.

**Table 14-2. Supported interface devices for PCL-capable printers**

Printer	Supported interface devices
4900	/4X Interface Controller
	AGILE 6287 ALLY Interface Controller <sup>1</sup>
	AGILE 6287Ultra Interface Controller <sup>1</sup>
	BARR PRINT/GATE
	BARR/PRINT for TCP/IP
	i-data 3270 C/RS Protocol Converter
	MPI Technologies CTY-2 Printer Adapter <sup>1,2</sup>
4890 NPS	BARR PRINT/GATE
	BARR/PRINT for TCP/IP
4850 NPS	BARR PRINT/GATE
	BARR/PRINT for TCP/IP

Table 14-2. Supported interface devices for PCL-capable printers (Continued)

Printer	Supported interface devices
4700 II (HP Laserjet IIID emulation mode)	/4X Interface Controller
	AGILE 6287 ALLY Interface Controller <sup>1</sup>
	AGILE 6287Ultra Interface Controller <sup>1</sup>
	BARR PRINT/GATE
	BARR/PRINT for TCP/IP
	i-data 3270 C/RS Protocol Converter
	MPI Technologies CTY-2 Printer Adapter <sup>1,2</sup>
4635 NPS	BARR PRINT/GATE
	BARR/PRINT for TCP/IP
4517	/4X Interface Controller
	AGILE 6287 ALLY Interface Controller <sup>1</sup>
	AGILE 6287Ultra Interface Controller <sup>1</sup>
	BARR PRINT/GATE
	BARR/PRINT for TCP/IP
	i-data 3270 C/RS Protocol Converter
	i-data Coax PCL Interface Card <sup>2,3</sup>
	MPI Technologies CTY-2 Printer Adapter <sup>1,2</sup>
4512	/4X Interface Controller
	AGILE 6287 ALLY Interface Controller <sup>1</sup>
	AGILE 6287Ultra Interface Controller <sup>1</sup>
	BARR PRINT/GATE
	BARR/PRINT for TCP/IP
	i-data 3270 C/RS Protocol Converter
	i-data Coax PCL Interface Card <sup>2,4</sup>
	MPI Technologies CTY-2 Printer Adapter <sup>1,2</sup>

Table 14-2. Supported interface devices for PCL-capable printers (Continued)

Printer	Supported interface devices
4508	/4X Interface Controller
	AGILE 6287 ALLY Interface Controller <sup>1</sup>
	AGILE 6287Ultra Interface Controller <sup>1</sup>
	BARR PRINT/GATE
	BARR/PRINT for TCP/IP
	i-data 3270 C/RS Protocol Converter
	i-data Coax PCL Interface Card <sup>2,5</sup>
	MPI Technologies CTY-2 Printer Adapter <sup>1,2</sup>
4235 (HP Laserjet IID emulation mode)	/4X Interface Controller
	AGILE 6287 ALLY Interface Controller <sup>1</sup>
	AGILE 6287Ultra Interface Controller <sup>1</sup>
	BARR PRINT/GATE
	BARR/PRINT for TCP/IP
	i-data 3270 C/RS Protocol Converter
	MPI Technologies CTY-2 <sup>1,2</sup>
4230	/4X Interface Controller
	AGILE 6287 ALLY Interface Controller <sup>1</sup>
	AGILE 6287Ultra Interface Controller <sup>1</sup>
	BARR PRINT/GATE
	BARR/PRINT for TCP/IP
	i-data 3270 C/RS Protocol Converter
	i-data Coax PCL Interface Card <sup>2,3</sup>
	MPI Technologies CTY-2 Printer Adapter <sup>1,2</sup>

Table 14-2. Supported interface devices for PCL-capable printers (Continued)

Printer	Supported interface devices
4220	/4X Interface Controller
	AGILE 6287 ALLY Interface Controller <sup>1</sup>
	AGILE 6287Ultra Interface Controller <sup>1</sup>
	BARR PRINT/GATE
	BARR/PRINT for TCP/IP
	i-data 3270 C/RS Protocol Converter
	i-data Coax PCL Interface Card <sup>2,3</sup>
	MPI Technologies CTY-2 Printer Adapter <sup>1,2</sup>
4219	/4X Interface Controller
	AGILE 6287 ALLY Interface Controller <sup>1</sup>
	AGILE 6287Ultra Interface Controller <sup>1</sup>
	BARR PRINT/GATE
	BARR/PRINT for TCP/IP
	i-data 3270 C/RS Protocol Converter
	i-data Coax PCL Interface Card <sup>2,3</sup>
	MPI Technologies CTY-2 Printer Adapter <sup>1,2</sup>
4215	/4X Interface Controller
	AGILE 6287 ALLY Interface Controller <sup>1</sup>
	AGILE 6287Ultra Interface Controller <sup>1</sup>
	BARR PRINT/GATE
	BARR/PRINT for TCP/IP
	i-data 3270 C/RS Protocol Converter
	i-data Coax PCL Interface Card <sup>2,3</sup>
	MPI Technologies CTY-2 Printer Adapter <sup>1,2</sup>

Table 14-2. Supported interface devices for PCL-capable printers (Continued)

Printer	Supported interface devices
4213 II (HP Laserjet IIID emulation mode)	/4X Interface Controller
	AGILE 6287 ALLY Interface Controller <sup>1</sup>
	AGILE 6287Ultra Interface Controller <sup>1</sup>
	BARR PRINT/GATE
	BARR/PRINT for TCP/IP
	i-data 3270 C/RS Protocol Converter
	MPI Technologies CTY-2 Printer Adapter <sup>1,2</sup>
4090 NPS	BARR PRINT/GATE
	BARR/PRINT for TCP/IP
4050 NPS	BARR PRINT/GATE
	BARR/PRINT for TCP/IP

<sup>1</sup> Does not support LU0 communication protocol.

<sup>2</sup> Does not support MODE=EBCDIC character code.

<sup>3</sup> Does not support LU0 or LU3 communication protocols.

<sup>4</sup> Does not support LU0 or LU3 communication protocols.

<sup>5</sup> Does not support LU0 or LU3 communication protocols.

## /4X interface controller

### Switch settings

This controller has software-controlled switch settings. XPAF makes the necessary settings from the expected manufacturer default settings. If you change the settings, reset them to their defaults before installing XPAF.

### XPAF printer profile parameter settings

To use the /4X interface controller, set the CONVERTER printer profile parameter value to **4X**.

## *AGILE 6287 ALLY interface controller*

---

### *Switch settings*

---

The AGILE 6287 ALLY is shipped from the manufacturer with a set of default switch settings. When using the interface controller with XPAF, use this default configuration. XPAF makes the necessary settings from the expected manufacturer default settings. No changes are required.

### *XPAF printer profile parameter settings*

---

To use the AGILE 6287 ALLY printer interface controller, set the CONVERTER printer profile parameter value to **ALLY**.

### *Other requirements*

---

After you first install an AGILE 6287 ALLY or reset the unit to factory defaults, you must invoke mode 3 on the protocol converter or power the unit off and back on to effect the change. Do this after starting the printer and downloading the configuration string.

## *AGILE 6287Ultra interface controller*

---

### *Switch settings*

---

XPAF uses the switch settings provided in the manufacturer's documentation with the exception of one setting:

- Switch 7 in bank B must be set **ON**.

### *XPAF printer profile parameter settings*

---

To use the AGILE 6287Ultra interface controller, set the CONVERTER printer profile parameter value to **AGILE**.

### *Other requirements*

---

After you first install an AGILE 6287Ultra or change the communication mode (for example, LU1 to LU3 or EBCDIC to ASCII), you must press the RESET button on the front of the interface controller to effect the change. Do this after starting the printer and downloading the configuration string.

## ***BARR PRINT/GATE support***

---

XOSF supports PCL-capable printers connected to a Local Area Network using BARR PRINT/GATE. XOSF and the BARR PC use a VTAM SDLC line for communication. BARR PRINT/GATE supports two LAN protocols:

- Novell
- TCP/IP

## ***Hardware and software requirements***

---

The hardware and software requirements depend on your network configuration. Because numerous LAN protocols are supported, you must contact Barr Systems, Inc. to determine the exact requirements for your site.

## ***XPAF printer profile parameter settings***

---

Include these settings in the PCL-capable printer's profile:

```
CONVERTER=BARRGATE,  
LUTYPE=LU1,  
MODE=ISO6937,  
PCL=PCL5,  
SLU=SLU2222,  
WRITER=REMOTE
```

These restrictions apply:

- MODE=EBCDIC is not supported.
- You cannot use the BUFSIZE, SDLCRLC, SELECT, or SETUP printer profile parameters with BARR PRINT/GATE.

## ***BARR PRINT/GATE settings***

---

The Installation Description contains the parameters needed by the BARR PRINT/GATE program and the host system. For more information on the BARR PRINT/GATE installation, refer to *BARR PRINT/GATE* or *BARR PRINT/GATE for TCP/IP*.

Depending on your printer model, use one of the following two procedures to create an Installation Description.

Option 1 — For all PCL-capable printers except NPS models:

- Step 1.** Access the Installation Description menu following the procedure described in the BARR PRINT/GATE documentation.
- Step 2.** At the Installation Description menu, select **3270 Printers**.
  - a. Set 'Number of 3270 Printers' to the number of printers you will be attaching to BARR PRINT/GATE.
  - b. Set 'LUNAME' to the VTAM LU name for each printer.
- Step 3.** At the Installation Description menu, select **Communications Link**. Set the SDLC options according to your system configuration.

- Step 4.** At the Installation Description menu, select **Devices and Printers: LPT1, LPT2, LPT3, COM1, COM2**.
- On the Devices and Printers screen, select the 'send to network' option appropriate for your site:
    - If you are connecting 12 or fewer printers, select **NET1-12**.
    - If you are connecting 13 to 24 printers, select **NET13-24**.
  - On the NET Devices screen, select the **NET $n$**  field for the printer to connect.
  - Select **Network Printer Options**.
  - On the Network Printer Options screen, set the network type to a value appropriate for your system configuration.
  - On the Choose Printer Type screen, select **Generic**.
  - Repeat steps b through e for each printer to connect.

- Step 5.** At the Installation Description menu, select **Assign Devices**.
- Set the source to the printer defined at the 3270 Printers screen.
  - Set the destination to **NET $n$** , where  $n$  is the printer you are currently assigning.
  - Set the receive mode to **ASCII**.

Option 2 — For NPS PCL-capable printers:

- Step 1.** Access the Installation Description menu following the procedure described in the BARR PRINT/GATE documentation.
- Step 2.** At the Installation Description menu, select **3270 Printers**.
- Set 'Number of 3270 Printers' to the number of printers you will be attaching to BARR PRINT/GATE.
  - Set 'LUNAME' to the VTAM LU name for each printer.
- Step 3.** At the Installation Description menu, select **Communications Link**. Set the SDLC options according to your system configuration.
- Step 4.** At the Installation Description menu, select **Devices and Printers: LPT1, LPT2, LPT3, COM1, COM2**. Repeat these steps for each printer to connect.
- On the Devices and Printers screen, select the 'send to network' option appropriate for your site:
    - If you are connecting 12 or fewer printers, select **NET1-12**.
    - If you are connecting 13 to 24 printers, select **NET13-24**.
  - On the NET Devices screen, select the **NET $n$**  field for the printer to connect.
  - Select **Network Printer Options**.
  - On the Network Printer Options screen, select **TCP/IP LPR (UNIX) Print Queue**.
  - Set the protocol to **Line Printer Daemon**.

- f. Set 'Print Server Address' to the IP address of the printer.
- g. Set 'Printer Queue' to the virtual printer name defined on the NPS printer.
- h. Set 'Send Control File First' to **YES**.
- i. Optionally, you may set 'Local Host Name.' This name appears on the NPS banner page and can be used to help identify the document.
- j. On the Choose Printer Type screen, select Generic.

**Step 5.** At the Installation Description menu, select **Print Spool Description**.

LPR requires that the entire dataset be available before being transmitted to the printer. To accomplish this, send the document through the BARR spool first. You should allocate a spool file for each LPR connection.

- a. Set 'Spool Printers' to the number of LPR connections defined and press **ENTER**.
- b. Select **Initial Spool Printer Settings**.
- c. Set 'Form' and 'Class.' 'Form' is typically set to blanks. 'Class' can be used to automatically match the class of the data arriving from the host (class set on the Assign Devices menu) to the class of the NET $n$  printer. When the classes match, the document will be routed directly from the Spool to the printer without any intervention.

**Step 6.** At the Installation Description menu, select **Assign Devices**. You must match the 3270 printers (sources) to the NET $n$  devices (destinations).

- a. Set the source printer to one of the Spool's and press **ENTER**.
- b. Select **Receive Mode** from the list at the bottom of the screen.
- c. Select **ASCII** from the list and press **ENTER**.
- d. Select **Options** from the list at the bottom of the screen.
- e. Set 'Class' to the same class as defined to the spool being used for this device and press **ENTER**.

## ***BARR/PRINT for TCP/IP***

---

XPAF supports BARR/PRINT for TCP/IP for both Centralized and PCL-capable printers.

### ***Hardware and software requirements***

---

For channel attached centralized printers the BARR PRINT370 product must be installed. For PCL-capable printers the BARR/LPR software must be available.

### ***XPAF printer profile parameter settings***

---

Include these settings in the channel attached centralized printer's profile:

```
DEVICE=printer name,  
IPADDR=ipaddr,  
LPRQNAME=BARRTCP1,  
TCPMODE=TCPLPR,
```

```
WRITER=REMOTE,  
CONVERTER=BARRTCP,  
XNS=NO,  
SETUP=OUTPUT
```

Include these settings in the PCL-capable printer's profile:

```
DEVICE=printer name,  
IPADDR=ipaddr,  
LPRQNAME=BARRTCP1,  
TCPMODE=TCPLPR,  
WRITER=REMOTE,  
CONVERTER=BARRTCP,
```

where:

<i>printer name</i>	Any centralized or PCL-capable printer.
<i>ipaddr</i>	The IP address of the BARR PC.
LPRQNAME	The queue name of the BARR PC. (BARR software defaults to BARRTCP1 through BARRTCP4.)
TCPMODE	Must be set to TCPLPR as it is the only mode supported.
CONVERTER	Defined as BARRTCP, which defines the BARR/PRINT for TCP/IP interface.
XNS	Must be set to NO for centralized printers.
SETUP	An optional parameter for generation of the BARR OUTPUT statement, and is only valid for centralized printers.



---

**NOTE:** The TCP/IP parameters (IPADDR, LPRQNAME, and TCPMODE) must precede the CONVERTER parameter in the printer profile.

---

### ***BARR/PRINT for TCP/IP settings***

---

The Installation Description contains the parameters needed by the BARR/PRINT for TCP/IP program and the host system. For more information on the BARR/PRINT for TCP/IP installation, refer to *BARR/PRINT for TCP/IP Version 97A11, Edition 5: Print NIX hosts with the TCP/IP transport protocol*.

Depending on your printer model, use one of the following three procedures to create an Installation Description.

#### **Option 1 — For all PCL-capable printers except NPS models:**

- Step 1.** At the Installation Description menu, select **BARR/PRINT for TCP/IP**.
- Step 2.** At the BARR/PRINT for TCP/IP Queues menu, select the first queue (**BARRTCP1**).

- Step 3.** At the TCP/IP Queue Options menu:
- a. At Use this Source Device, specify **YES**.
  - b. If desired, change the default session name (BARRTCP1) to any name.
  - c. At the Use \_\_Protocol screen, insert **LINE PRINTER DAEMON**.
  - d. Set 'Print Server Address' to the IP address of the printer.
  - e. Set 'Printer Queue' to the virtual printer name defined on the NPS printer.
  - f. At the Process LPD Control File screen:
    - Specify **NO** if no information is to be extracted from that file.
    - Specify **YES** if information is to be extracted from that file.
  - g. Use TCP/IP Port is not used with printer daemon protocol.
  - h. Translate ASCII to EBCDIC in S/370 mode, specify **YES**.
  - i. Specify **NO** at Emulate DPC Carriage Control.
  - j. Specify **NO** at Use SPUR Compatibility Carriage Control.
  - k. Specify **NO** for Convert Tabs to Spaces.
  - l. At 1F(enable special format) specify **NO**.
  - m. Press **ENTER** to complete TCP/IP Queue Options.
  - n. Repeat steps a through k for each queue you want to use.
- Step 4.** At the Installation Description menu, select **Devices and Printers: LPT, COM, NET, SEND, LAN**.
- a. On the Devices and Printers screen, select the 'send to network' option appropriate for your site:
    - If you are connecting 12 or fewer printers, select **NET1-12**.
    - If you are connecting 13 to 24 printers, select **NET13-24**.
  - b. On the NET Devices screen, select the **NETn** field for the printer to connect.
  - c. Select **Network Printer Options**.
  - d. On the Network Printer Options screen, set the network type to a value appropriate for your system configuration.
  - e. On the Choose Printer Type screen, select **Generic**.
  - f. Repeat steps b through e for each printer to connect.
  - g. Save changes and exit.
- Step 5.** At the Installation Description menu, select **Assign Devices**.
- a. Set the source to the printer defined at the 3270 Printers screen.
  - b. Set the destination to **SPOOL**.
  - c. Set the receive mode to **BINARY**.

**Option 2 — For NPS PCL-capable printers:**

- Step 1.** At the Installation Description menu, select **BARR/PRINT for TCP/IP**.
- Step 2.** At the BARR/PRINT for TCP/IP Queues menu, select the first queue (**BARRTCP1**).
- Step 3.** At the TCP/IP Queue Options menu:
- a. At Use this Source Device, specify **YES**.
  - b. If desired, change the default session name (BARRTCP1) to any name.
  - c. At the Use \_\_Protocol screen, insert **LINE PRINTER DAEMON**.
  - d. At the Process LPD Control File screen:
    - Specify **NO** if no information is to be extracted from that file.
    - Specify **YES** if information is to be extracted from that file.
  - e. Use TCP/IP Port is not used with printer daemon protocol.
  - f. Translate ASCII to EBCDIC in S/370 mode.
  - g. Specify **NO** at Emulate DPC Carriage Control.
  - h. Specify **NO** at Use SPUR Compatibility Carriage Control.
  - i. Specify **NO** for Convert Tabs to Spaces.
  - j. At 1F(enable special format) specify **NO**.
  - k. Press **ENTER** to complete TCP/IP Queue Options.
  - l. Repeat steps a through k for each queue you want to use.
  - m. Save changes and exit
- Step 4.** At the Installation Description menu, select **Devices and Printers: LPT, COM, NET, SEND, LAN**. Repeat these steps for each printer to connect.
- a. On the Devices and Printers screen, select the 'send to network' option appropriate for your site:
    - If you are connecting 12 or fewer printers, select **NET1-12**.
    - If you are connecting 13 to 24 printers, select **NET13-24**.
  - b. On the NET Devices screen, select the **NETn** field for the printer to connect.
  - c. Select **Network Printer Options**.
  - d. On the Network Printer Options screen, select **TCP/IP LPR (UNIX) Print Queue**.
  - e. Set the protocol to **Line Printer Daemon**.
  - f. Set 'Print Server Address' to the IP address of the printer.
  - g. Set 'Printer Queue' to the virtual printer name defined on the NPS printer.
  - h. Set 'Send Control File First' to **YES**.
  - i. Optionally, you may set 'Local Host Name.' This name appears on the NPS banner page and can be used to help identify the document.

- j. On the Choose Printer Type screen, select **Generic**.

**Step 5.** At the Installation Description menu, select Print Spool Description.

LPR requires that the entire dataset be available before being transmitted to the printer. To accomplish this, send the document through the BARR spool first. You should allocate a spool file for each LPR connection.

- a. Set 'Spool Printers' to the number of LPR connections defined and press **ENTER**.
- b. Select **Initial Spool Printer Settings**.
- c. Set 'Form' and 'Class.' 'Form' is typically set to blanks. 'Class' can be used to automatically match the class of the data arriving from the host (class set on the Assign Devices menu) to the class of the NET $n$  printer. When the classes match, the document will be routed directly from the Spool to the printer without any intervention.

**Step 6.** At the Installation Description menu, select Assign Devices.

- a. Select **BARRTCP1** or, if changed, the new session name.
- b. Select **SPOOL** as the destination
- c. Specify the file name and option if desired.
- d. Select **Receive Mode** from the list at the bottom of the screen.
- e. Set receive mode as follows:
  - Select **S/370 CHANNEL** for channel attached centralized printers.
  - Select **BINARY** for PCL-capable printers.
- f. Repeat steps a through e for each queue that appears in the Assigned Devices list
- g. Save changes and exit.

**Option 3** — For S/370 printers:

**Step 1.** At the Installation Description menu, select **BARR/PRINT for TCP/IP**.

**Step 2.** At the BARR/PRINT for TCP/IP Queues menu, select the first queue (**BARRTCP1**).

**Step 3.** At the TCP/IP Queue Options menu:

- a. At Use this Source Device, specify **YES**.
- b. If desired, change the default session name (BARRTCP1) to any name.
- c. At the Use \_\_Protocol screen, insert **LINE PRINTER DAEMON**.
- d. At the Process LPD Control File screen:
  - Specify **NO** if no information is to be extracted from that file.
  - Specify **YES** if information is to be extracted from that file.
- e. Use TCP/IP Port is not used with printer daemon protocol.
- f. Translate ASCII to EBCDIC in S/370 mode. Set this parameter to **NO** when sending data to a channel attached centralized printer using PRINT370.

- g. Specify **NO** at Emulate DPC Carriage Control.
  - h. Specify **NO** at Use SPUR Compatibility Carriage Control.
  - i. Specify **NO** for Convert Tabs to Spaces.
  - j. At 1F(enable special format) specify **YES**.
  - k. Press **ENTER** to complete TCP/IP Queue Options.
  - l. Repeat steps a through k for each queue you want to use.
  - m. Save changes and exit.
- Step 4.** At the Installation Description menu, select S/370 Channel-Attached Printers.
- Step 5.** From the list of printers displayed, select the appropriate printer.
- Step 6.** At the S/370 Channel-Attached Printer Definition screen, set 'Printer type?' to **Xerox laser**.
- Step 7.** Select **Set Printer Options**.
- Step 8.** At the Printer Options screen, set 'Modify advanced printer options?' to **YES**.
- Step 9.** At the Advanced Printer Options screen, enter these values:
- Set 'Pad zero length records' to **NO**.
  - Set 'Pad zero length Skip to channel 1' to **NO**.
- Step 10.** At the Assign Devices option assign the TCP/IP session name to an S/370 printer or to **SPOOL**.



---

**NOTE:** To use the BARR OUTPUT statement the assigned device must be set to SPOOL.

---

### *Using the BARR OUTPUT statement*

XPAF supports the generation of the BARR OUTPUT statement only for channel attached centralized devices which are defined with 'receive mode' set to 'S/370 channel.'

To enable this feature you must code **SETUP=OUTPUT** in the printer profile used for this device. To use this feature you must set the BARR software to detect and process this statement. Follow these steps from the Assign Devices menu to do so:

- Step 1.** Select the source that will receive the BARR OUTPUT statement.
- Step 2.** Select **OPTIONS**.
- Step 3.** Set Output Statement Used in File to **YES**.

## **BARR/SNA RJE support**

---

XOSF supports PCL-capable printers connected to a Local Area Network using BARR/SNA RJE. XOSF and the BARR PC use a VTAM SDLC line for communication. BARR/SNA RJE supports two LAN protocols:

- Novell
- TCP/IP

## **Hardware and software requirements**

---

The hardware and software requirements depend on your network configuration. Because numerous LAN protocols are supported, you must contact Barr Systems, Inc. to determine the exact requirements for your site.

## **XPAF printer profile parameter settings**

---

Include these settings in the PCL-capable printer's profile:

```
CONVERTER=BARRSNA,  
LUTYPE=LU1,  
MODE=EBCDIC,  
PCL=PCL5,  
SLU=SLU2222,  
WRITER=REMOTE
```

For more information about these parameters, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

## **BARR/SNA RJE settings**

---

The Installation Description contains the parameters needed by the BARR/SNA RJE program and the host system. For more information on the BARR/SNA RJE installation, refer to *BARR/SNA RJE Version 90, Edition 1: Remote Communications for IBM PC, PS/2, and Compatible Computers*.

Depending on your printer model, use one of the following two procedures to create an Installation Description.

### **Option 1 — For all PCL-capable printers except NPS models:**

- Step 1.** Access the Installation Description menu following the procedure described in the BARR/SNA RJE documentation.
- Step 2.** At the Installation Description menu, select **3270 Printers**.
  - a. Set 'Number of 3270 Printers' to the number of printers you will be attaching to BARR/SNA RJE.
  - b. Set 'LUNAME' to the VTAM LU name for each printer.
- Step 3.** At the Installation Description menu, select **Communications Link**. Set the SDLC options according to your system configuration.

**Step 4.** At the Installation Description menu, select **Devices and Printers: LPT1, LPT2, LPT3, COM1, COM2.**

- a. On the Devices and Printers screen, select the 'send to network' option appropriate for your site:
  - If you are connecting 12 or fewer printers, select **NET1-12.**
  - If you are connecting 13 to 24 printers, select **NET13-24.**
- b. On the NET Devices screen, select the **NET $n$**  field for the printer to connect.
- c. Select **Network Printer Options.**
- d. On the Network Printer Options screen, set the network type to a value appropriate for your system configuration.
- e. On the Choose Printer Type screen, select **Generic.**
- f. Repeat steps b through e for each printer to connect.

**Step 5.** At the Installation Description menu, select **Print Spool Description.**

LPR requires that the entire dataset be available before being transmitted to the printer. To accomplish this, send the document through the BARR spool first. You should allocate a spool file for each LPR connection.

- a. Set 'Spool Printers' to the number of LPR connections defined and press **ENTER.**
- b. Select **Initial Spool Printer Settings.**
- c. Set 'Form' and 'Class.' 'Form' is typically set to blanks. 'Class' can be used to automatically match the class of the data arriving from the host (class set on the Assign Devices menu) to the class of the NET $n$  printer. When the classes match, the document will be routed directly from the Spool to the printer without any intervention.

**Step 6.** At the Installation Description menu, select **Assign Devices.**

- a. Set the source printer to one of the Spool's and press **ENTER.**
- b. Select **Receive Mode** from the list at the bottom of the screen.
- c. Select **ASCII** from the list and press **ENTER.**
- d. Select **Options** from the list at the bottom of the screen.
- e. Set 'Class' to the same class as defined to the spool being used for this device.
- f. If you are using PDIR, set 'Strip Spool Header from File' to NO. If you are not using PDIR, set 'Strip Spool Header from File' to YES.

**Step 7.** At the BARR Configuration menu, select **Tuning and Global Options.**

- a. Select **Printer Control.**
- b. Change 'Translate RJE Transparent Data to ASCII ' to NO.

**Option 2 — For NPS PCL-capable printers:**

- Step 1.** Access the Installation Description menu following the procedure described in the BARR/SNA RJE documentation.
- Step 2.** At the Installation Description menu, select **3270 Printers**.
- Set 'Number of 3270 Printers' to the number of printers you will be attaching to BARR/SNA RJE.
  - Set 'LUNAME' to the VTAM LU name for each printer.
- Step 3.** At the Installation Description menu, select **Communications Link**. Set the SDLC options according to your system configuration.
- Step 4.** At the Installation Description menu, select **Devices and Printers: LPT1, LPT2, LPT3, COM1, COM2**. Repeat these steps for each printer to connect.
- On the Devices and Printers screen, select the 'send to network' option appropriate for your site:
    - If you are connecting 12 or fewer printers, select **NET1-12**.
    - If you are connecting 13 to 24 printers, select **NET13-24**.
  - On the NET Devices screen, select the **NET $n$**  field for the printer to connect.
  - Select **Network Printer Options**.
  - On the Network Printer Options screen, select **TCP/IP LPR (UNIX) Print Queue**.
  - Set the protocol to **Line Printer Daemon**.
  - Set 'Print Server Address' to the IP address of the printer.
  - Set 'Printer Queue' to the virtual printer name defined on the NPS printer.
  - Set 'Send Control File First' to **YES**.
  - Optionally, you may set 'Local Host Name.' This name appears on the NPS banner page and can be used to help identify the document.
  - On the Choose Printer Type screen, select **Generic**.
- Step 5.** At the Installation Description menu, select **Print Spool Description**.
- LPR requires that the entire dataset be available before being transmitted to the printer. To accomplish this, send the document through the BARR spool first. You should allocate a spool file for each LPR connection.
- Set 'Spool Printers' to the number of LPR connections defined and press **ENTER**.
  - Select **Initial Spool Printer Settings**.
  - Set 'Form' and 'Class.' 'Form' is typically set to blanks. 'Class' can be used to automatically match the class of the data arriving from the host (class set on the Assign Devices menu) to the class of the NET $n$  printer. When the classes match, the document will be routed directly from the Spool to the printer without any intervention.

- Step 6.** At the Installation Description menu, select **Assign Devices**. You must match the 3270 printers (sources) to the NETn devices (destinations).
- Set the source printer to one of the Spool's and press **ENTER**.
  - Select **Receive Mode** from the list at the bottom of the screen.
  - Select **BINARY** from the list and press **ENTER**.
  - Select **Options** from the list at the bottom of the screen.
  - Set 'Class' to the same class as defined to the spool being used for this device and press **ENTER**.

### *i-data 3270 C/RS protocol converter*

---

The i-data 3270 C/RS protocol converter has two processing modes: XES and PCL.

#### *Switch settings*

---

The protocol converter has software-controlled switch settings. At start-up, XOSF makes the necessary settings from the expected manufacturer default settings.

A toggle switch on the protocol converter determines which processing mode to use. Set the toggle switch to **B** to indicate XES mode.

#### *XPAF printer profile parameter settings*

---

To use the i-data 3270 C/RS protocol converter, set the CONVERTER printer profile parameter value to **3270C/RS**.

#### *Firmware requirements*

---

This protocol converter is at a minimum firmware level of version 121.010. It requires no additional setup for use with PCL-capable printers.

### *i-data Coax PCL interface card*

---

#### *Switch settings*

---

The i-data Coax PCL interface card is shipped from the manufacturer with a set of default switch settings. When using the interface card with XOSF, use this default configuration. XOSF makes the necessary settings from the expected manufacturer default settings. No changes are required by the user.

#### *XPAF printer profile parameter settings*

---

To use the i-data Coax PCL interface card, set the CONVERTER printer profile parameter value to **XCO**.

### *Firmware requirements*

---

This interface card is at a minimum firmware level of version 116.020.

## *MPI CTY-2 printer adapter*

---

### *Switch settings*

---

The printer adapter has software-controlled switch settings. At start-up, XOSF makes the necessary settings from the expected manufacturer default settings.

### *XPAF printer profile parameter settings*

---

To use the MPI CTY-2 printer adapter, set the CONVERTER printer profile parameter value to **CTY-2**, and set the MODE printer profile parameter value to **ISO6937**.



**NOTE:** The MODE=EBCDIC printer profile parameter setting is not valid for CONVERTER=CTY-2. XOSF sets the MODE to ISO6937; if you specify any other value for MODE in the printer profile, that value is overridden.

---

### *Firmware requirements*

---

The MPI CTY-2 has a minimum firmware level of version 5.01. It requires no additional setup for use with PCL-capable printers.

## Printing to PCL-capable printers

---

The following sections provide step-by-step instruction on how to perform these functions:

- Set up PCL-capable printers
- Send documents to PCL-capable printers using TCP/LPR or TCP/IP protocols
- Set device-specific features

## Setting up PCL-capable printers

---

To set up PCL-capable printers to accept documents from XPAF, perform these steps:

- Step 1.** Allocate and initialize the PCL font, form, and image libraries.
- If you chose to have XPAF allocate the PCL resource libraries during installation (you did not specify `OPTIONS=NOPCL` in the `#GENRSC` macro), continue with step 2.
  - If you entered `OPTIONS=NOPCL` in the `#GENRSC` macro at installation time, allocate and initialize the PCL resource libraries on your host system. To manually allocate the libraries, use the LDMUTIL batch utility. For instructions on using this utility, refer to appendix A, “[Defining and initializing native libraries](#).”

- Step 2.** If you want to use libraries other than the default, add the `PFONTLIB`, `PFORMLIB`, and `PIMAGELIB` parameters to either or both of these locations:

- The `XINSXOSF` member of `XINPARM`
- The printer's profile

Ensure that these parameters point to the DD statements that define the PCL resource libraries for the specified printer.




---

**NOTE:** To use named fonts they must first be downloaded to your printer. This can be achieved by running the sample PCL font extraction REXX procedure, `FONTXTR`, and then using LPR to send the output dataset to the relevant printer. Please refer to the `FSDOWNLOAD PJL` command in the *System Administrator Guide* for the target printer for additional information.

---

- Step 3.** Add these parameters to the printer profile of the printer you are setting up to run in PCL mode:
- `MEMORY` — Specifies the amount of memory currently available on the printer.
  - `MLANG` — Indicates whether document processing via the mode change key (`=MCK=`) is required.

- PCL — Indicates the default printer command language for this printer.
- PCLREQ — Indicates whether XES-to-PCL conversion is requested, or if the document is converted to the default printer command language or is passed through without conversion.

**Step 4.** Set up the target printer to accept PCL data streams using either of these methods:

- Set the PCL options manually on the target printer. Refer to your printer's system administrator guide for instructions.
- Specify these parameters in your printer profile (for all documents) or via the XPAF extended JCL keywords (for an individual document) to allow XPAF to dynamically change the printer language mode via the mode change key (MCK) command:

```
PCL=PCL5 (printer profile)
PCLDS=PCL5 (extended JCL)
PCLREQ=GEN
MLANG=Y
```

For more information on the parameters and keywords mentioned in the previous steps, refer to [Section Five: XPAF Parameter and Keyword Reference](#).

## Sending TCP batch print jobs to PCL-capable printers

Follow this procedure to send a document to a PCL-capable printer using the TCP/LPR or TCP/IP protocols.

**Step 1.** Ensure that your TCP JCL datasets have been created and contain your customized XTCPLPRJ and XTCPIPJ members. Use XTCPLPRJ to send documents using the TCP/LPR protocol, and XTCPIPJ to send documents using the TCP/IP protocol.

**Step 2.** Ensure that a printer profile has been created for each printer you will be sending documents to using the TCP/LPR or TCP/IP protocols, and that it contains all the necessary TCP-related printer profile parameters.

**Step 3.** Send your document to the destination printer. XPAF will save the document to a disk dataset, and use the specified TCP JCL member to submit a batch job that will send it to the destination printer. When the dataset has been successfully transmitted, XPAF deletes it.

If you have not correctly specified the TCP dataset and JCL member in your printer's profile, XPAF will issue an error message. To print the dataset, you must manually LPR it. For example, if you are using IBM TCP/LPR, you could issue this LPR command:

```
LPR 'dataset-name(member-name)' AT ip-address PRINTER
queue-name FILTER L BINARY
```

Refer to IBM's *TCP/IP for MVS: User's Guide* for more information about this and other LPR commands you can use. If you are using another vendor's TCP software, refer to their documentation for valid command syntax.

For more information on TCP batch printing, refer to

# Modifying document processing

There are several XPAF-supplied parameters and keywords used to print PJJ and job ticket documents. This section identifies some of the keywords available in XPAF to change document processing. Refer to [Section Five: XPAF Parameter and Keyword Reference](#) for information about the keywords identified in this section and for other XPAF keywords available for document processing.

Table 14-3. Keywords for PJJ and job ticket processing

Keyword	Function
XPJLMEM	Must be specified to indicate PJJ processing.
XJOBTMEM	Specifies a job ticket to be retrieved from the dataset defined by LPRDSN.
XUSERAC1-3	Specifies user-defined variable information used by the members described in this table for variable substitution at the time of document creation.

## Using the insertion feature to add PJJ and job ticket commands

You can use the job ticket insertion feature to set device-specific features on NPS and DocuSP printers, and the PJJ insertion feature to set device-specific features on PCL-capable printers. For example, when a PJJ member is created to print three copies of a document, XPAF only transmits the document once, however, when the printer processes the PJJ three copies are printed.

The following members are provided in XPFSAMP:

- XPJL3COP — an example of PJJ commands
- XJTKJOB — an example of a job ticket
- XJTKJOB1 — an example of a variable insert

The XPFSAMP member, XPJL3COP, provides a set of PJJ commands that will produce three collated copies and suppress the printer-generated banner page on a DC265LP printer.

```
@PJJ COMMENT ** 3 copies, suppress DC265LP banner page **
@PJJ SET COPIES=3
@PJJ SET JOBOFFSET=ON
@PJJ COMMENT XRXbegin
@PJJ COMMENT OI D_ATT_START_SHEET OI D_VAL_JOB_SHEET_NONE;
@PJJ COMMENT OI D_ATT_JOB_TYPE OI D_VAL_JOB_TYPE_PRINT;
@PJJ COMMENT OI D_ATT_I NTERLEAVE OI D_VAL_I NTERLEAVE_NONE;
@PJJ COMMENT OI D_ATT_OUTPUT OI D_VAL_OUTPUT_PAGE_COLLATE;
@PJJ COMMENT XRXend
@PJJ ENTER LANGUAGE=PCL
```

The XPFSAMP member, XJTKJOB, when used on a DocuSP printer with a stapler, provides a set of 2 copies of the document, each copy will be stapled separately.

```
%RXbegin: 001.0300
%RXcopyCount: 2
%RXedgeStitching: SinglePortrait
%RXbookletMaker: False
%RXedgeStitchPosition: none top
%RXbinding: None
%RXend
```



**NOTE:** Since the copying is performed at the printer level in this example, each copy will contain a set of banner pages if banner pages have been enabled in the JES printer definition.

XPAF can insert document-specific information into a job ticket or PJJ member using XJOBTMEM or XPJLMEM. Variable substitution occurs when using the following information in XJOBTMEM or XPJLMEM:

Variable	Description
%FORMNAME	The JES FORM name used to process the document, i.e. STD1
%STEPNAME	The job step name i.e. PRTSTEP
%ACCOUNT	The account number used to print the job i.e. D498
%JOBNAME	The JES job name i.e. HWMPRTAC
%PRINTER	The XPAF/JES printer name i.e. PRT123
%STEPDDN	The job step ddname i.e. SYSUT1
%USERAC1	User variable extended JCL field
%USERAC2	User variable extended JCL field
%USERAC3	User variable extended JCL field
%DEVICE	The printer device from the XPAF PPT i.e. N32
%IPADDR	The IP address of the document i.e. 192.64.0.1
%IPADDZ	The default IP address from the XPAF PPT i.e. 192.64.0.4
%LPRDSN	The name of the XPAF created temporary LPR dataset

Variable	Description
%JOBNO	The JES job number
%LINES	The number of records in the dataset
%PAGES	The number of pages in the dataset
%QNAME	The name of the LPR queue the document will be sent to
%QNAMEZ	The name of the default LPR queue in the XPAF PPT
%PORT	The name of the IP port number the document will be sent to
%PORZ	The name of the default IP port number in the XPAF PPT
%USER	The user name of the account that submitted the job

Advanced users of this feature can use most of the fields defined in the following XPAF macros:

- Document Information Block, member @XDIB in SAMPMAC
- Printer Profile Table, member @XXQPPT in SAMPMAC
- Output Data Block, member @XODB in SAMPMAC
- XDIB DJDE extension, member @XDJD in SAMPMAC

Review the macros supplied in the sample macro library and use a '%' followed by the field name.

For example, the JES output class is held in the XDIB in field XDIBSOCL. To use the sysout class as a variable field in a PJJ or job ticket command file, specify %XDIBSOCL.

The XPFSAMP member, XJTKJOB1, shows how variable inserts can override the XPAF-generated job name displayed on the job queue on a DocuSP printer:

```
%XRXbegin: 001.0300
%XRXtitle: %JOBNAME %JOBNO %FORMNAME %XDIBSOCL
%XRXcopyCount: 1
%XRXend
```



**NOTE:** All PJJ commands begin with the prefix "@PJJ". All job ticket commands begin with the prefix "%XRX".

## *Default FORM and JOBNAME PJJ command processing*

---

You can create default PJJ commands that will be used for a job based on the JES job name or FORMS name. Simply create a member containing PJJ commands with the same name as the JOB or FORM. XPAF first searches for a member that matches the JOBNAME or FORM name and will use these commands if present.

The hierarchy of the member name to use is as follows:

1. JOBNAME
2. JES FORM name
3. extended JCL keyword XPJLMEM
4. The value specified by the XPJLMEM PPT keyword

## *Preparing to add PJJ commands to XPAF-created PCL documents*

---

- Step 1.** Create the relevant members in the LPRDSN dataset to include the PJJ desired parameters.
- Step 2.** (Optional) To include a set of PJJ commands that will be applied to documents with no specified user-defined commands, point the XPJLMEM parameter in the printer's PPT to the member containing the desired commands.
- Step 3.** Update the JCL to add the XPJLMEM keyword to the relevant OUTPUT statement(s)
- Step 4.** Ensure the target printer supports the PJJ commands created in the PDS member used.

## *Default FORM and JOBNAME job ticket command processing*

---

You can create default job ticket commands that will be used for a job based on the JES job name or FORMS name. Simply create a member, with the job ticket, with the same name as the JOB or FORM. XPAF first searches for a member that matches the JOBNAME or FORM name and will use these commands if present.

The hierarchy of the member name to use is as follows:

1. JOBNAME
2. JES FORM name
3. extended JCL keyword XJOBTMEM
4. The value specified by the XJOBTMEM PPT keyword.

## *Preparing to add job ticket commands to XPAF-created PCL documents*

---

- Step 1.** Create the relevant members in the LPRDSN dataset to include the desired job ticket parameters.
- Step 2.** (Optional) To include a set of job ticket commands that will be applied to documents with no specified user-defined commands, point the XJOBTMEM parameter in the printer's PPT to the member containing the desired commands.
- Step 3.** Update the JCL to add the XJOBTMEM keyword to the relevant OUTPUT statement(s).
- Step 4.** Ensure the target printer supports the job ticket commands created in the PDS member used.



# 15. *Printing via TCP/IP*

---

This chapter provides instructions for printing via TCP/IP. The TCP/IP direct socket support allows XPAF to transmit transformed document data across a network using TCP/IP socket technology to PCL-capable and decentralized printers.

This feature uses the IBM assembler macros from TCP/IP for MVS version 3, release 2, and is called EZASMI. These macros allow an application to interface with the latest version of TCP/IP for MVS and provide for the new functionality of IBM's TCP/IP interface, HPNS (high-performance native sockets). Utilizing these macros ensures all new performance and functionality that is added to IBM TCP/IP for OS/390 automatically works with XPAF without any application changes being required.

## *TCP/IP printing methods*

---

There are three methods available for printing via TCP/IP:

- [Direct LPR](#)
- [Direct socket](#)
- [TCP/IP batch](#)



---

**NOTE:** Any vendor and version of TCP/IP can be used, but for direct LPR, users must have IBM TCP/IP version 3.2.0 or higher installed.

---

## *Direct LPR*

---

Direct LPR uses the LPR/LPD protocol to send data to an LPD server. The LPD server can be built into the printer NIC or can be a separate device such as a Windows NT Server.

## *Direct socket*

---

Direct socket uses a different protocol to send data to an IP address and port number (referred to as a "socket"). XPAF sends the data as soon as it is generated so there is no need to create an intermediate file. Only certain printers (NICs) can support this protocol.

## *TCP/IP batch*

---

TCP/IP batch printing is used when direct printing is not desired or when IBM TCP/IP support is unavailable.

XPAF JCL keywords XIPADDR, XIPPORT, XLPRQNAM allow for dynamic IP assignment to a document via extended JCL. Each printer definition contains a default IP address and port number to support TCP/IP printing. If no IP address or port number is given via the JCL, the defaults from the printer parameters are used for each document transmission.

## *Sending print jobs via TCP/IP*

---

Follow these procedures to send documents to decentralized or PCL-capable printers using the TCP/IP protocol.

### *TCP direct LPR printing*

---

Use this method if your printer supports the LPR/LPD protocol (or is connected via an LPD server) and you are running IBM's TCP/IP for MVS.

- Step 1.** Ensure that the TCPIPJOB parameter within XINSXOSF has been defined.
- Step 2.** Ensure that a printer profile has been created for the printer you will be sending documents to using the direct LPR connection, and that it contains all the necessary printer profile parameters.

For example:

```
*PRT1240  
DEVICE=4517,  
IPADDR=13.245.111.001,(IP address of printer)  
TCPPOPT=515,(TCP port)  
LPRQNAME=PASSTHRU,(LPR queue name)  
TCPMODE=TCPLPR(Indicates LPR/LPD)
```

- Step 3.** Send your document to the destination printer.

If you have not specified your printer's profile correctly, XPAF will issue an error message. See [Section Six: XPAF Messages](#) for instructions concerning any error messages.

## *TCP direct socket printing*

---

Use this method if your printer supports a direct socket connection and you are running IBM's TCP/IP for MVS.

- Step 1.** Ensure that the initialization parameter TCPIPJOB has been defined.
- Step 2.** Ensure that a printer profile has been created for the printer to which you will be sending documents using the direct socket connection, and that it contains all the necessary printer profile parameters.

For example:

```
*PRT1240  
DEVICE=4517,  
IPADDR=13.245.111.001,(IP address of printer)  
TCPPOPT=245,(TCP port)  
TCPMODE=TCPIP(Indicates TCP/IP direct  
socket)
```

- Step 3.** Send your document to the destination printer.

If you have not specified your printer's profile correctly, XPAF will issue an error message. Refer to [Section Six: XPAF Messages](#) for instructions concerning any error messages.

## TCP batch printing

---

Use this method if your printer supports the LPR/LPD protocol (or is connected via an LPD server) and you are using a TCP/IP stack other than IBM's TCP/IP for MVS.

- Step 1.** Ensure that your TCP JCL dataset has been created and contains your customized XTCPLPRJ member.
- Step 2.** Ensure that a printer profile has been created for each printer to which you will be sending documents using the direct TCP/LPR protocol, and that it contains all the necessary TCP-related printer profile parameters including:

```
LPRDSN=dataset-name
LPRJCL=member-name
TCPMODE=LPR
```

- Step 3.** Send your document to the destination printer. XPAF will save the document to a disk dataset, and use the specified TCP JCL member to submit a batch job that will send it to the destination printer. When the dataset has been successfully transmitted, XPAF deletes it.

If you have not specified the TCP dataset and JCL member in your printer's profile correctly, XPAF will issue an error message. To print the dataset, you must manually LPR it. For example, if you are using IBM TCP/IP, you could issue this LPR command:

```
LPR 'dataset-name(member-name)' (AT ip-address PRINTER
queue-name FILTER I BINARY
```

Refer to *IBM's TCP/IP for MVS: User's Guide* for more information about this and other LPR commands you can use. If you are using another vendor's TCP software, refer to their documentation for valid command syntax.



## 16. *Performing an installation verification procedure*

---

On your installation tape, you received programs to perform installation verification procedures (IVPs) for:

- The complete XPAF product
- The CMA-SPOOL or CA-SPOOL subsystem
- The XDS subsystem

The procedures consist of a series of jobs designed to validate your XPAF installation, CMA-SPOOL or CA-SPOOL setup, and/or XDS setup.

### *Running the XPAF IVP*

---

The XPAF IVP executes XOAF and XOSF functions to ensure that the installation was successful. You can run the XPAF IVP through XOAF or through batch jobs.

### *Running the CMA-SPOOL or CA-SPOOL IVP*

---

The CMA-SPOOL or CA-SPOOL IVP executes XOSF functions only. You can run these IVPs through XOAF. However, these IVPs cannot be run through the IVP batch jobs supplied with XPAF.

Before you access XOAF to run the CMA-SPOOL or CA-SPOOL IVP, be sure you have specified COMSSTYP=CMASPOOL in both the XINSXOAF and XINSXOSF members of XINPARM.

### *Running the XDS IVP*

---

The XDS IVP executes XOSF functions only. You can run the XDS IVP through XOAF. The XDS IVP cannot be run through the IVP batch jobs supplied with XPAF.

Before you access XOAF to run the XDS IVP, be sure you have specified COMSSTYP=DIRECT in both the XINSXOAF and XINSXOSF members of XINPARM you created for XDS.

## *What does the IVP test?*

---

The IVPs test to ensure your installation successfully generated all components needed for XOAF and/or XOSF processing.

### *XOAF testing*

---

When you select XOAF batch processing, XPAF generates a batch job that loads a resource to a native library, then performs an LDM library directory display for that library.

### *XOSF testing*

---

The XOSF IVP jobs generate centralized and decentralized documents using the resources prepared during XOAF installation.

- To verify centralized printer processing, run the line-mode, DJDE, page-formatted, and AFP IVPs.
- To verify decentralized and PCL-capable printer processing, run the line-mode, DJDE, XES, page-formatted, AFP, and pass-through IVPs.

### *XPAF extended JCL testing*

---

The DJDE, page-formatted, and AFP IVP jobs test XPAF extended JCL. If you have not installed XPAF extended JCL on your system, you can only run the line-mode IVP job.

## Setup requirements

---

Before you execute the IVPs, ensure that you have installed the necessary hardware and made the appropriate resources available to XPAF.

### Hardware

---

The tests that the IVPs perform require no physical intervention on the printer. However, you must have any necessary hardware installed on your system. For example, you must have an XGRAPH cartridge installed on your 4045 printer to print images.

For additional hardware requirements, refer to chapter 2, “[Installation requirements](#).”

### Printing IVPs on the 4045 printer

---

To print the IVPs successfully on a 4045 printer, the printer must have 454,640 bytes of memory available.

### Resources

---

To generate the expected results, use the DFAULT JSL provided with XPAF in XPFSAMP.

### Printer profile parameter settings

---

The resources for native Xerox IVP jobs are distributed in centralized resource libraries. If you have changed the values for the SFONTLIB, SFORMLIB, and SIMAGELIB printer profile parameters from their default settings, you must change them back to SFONTLIB=CFONTLIB, SFORMLIB=CFORMLIB and SIMAGELIB=CIMGLIB to print the IVPs successfully.

### Printing the line-mode IVP on decentralized or PCL-capable printers

---

Before you print the line-mode IVP on a decentralized or PCL-capable printer, verify that the default font on the printer is a 6-point landscape font similar to L0112B or XCP14-L.

### Using a custom DJDE IDEN

---

The DJDE IVP uses the XPAF system default DJDE IDEN. To use a different DJDE IDEN, you should run the IVPs before loading your customized JSL to the host.

### *Printing the DJDE IVP on decentralized or PCL-capable printers*

---

When printing the DJDE IVP to a decentralized or PCL-capable printer, the centralized images used for this IVP are converted to decentralized format. An information message is issued but can be ignored.

### *Printing the AFP IVP*

---

Before you verify AFP processing, be sure to:

- Allocate IBM AFP resource libraries to XOSF. Refer to “[Step 3 – Update the system procedure library](#)” in chapter 5, “[Customizing your system](#)” for detailed information.
- Ensure Sonoran Serif character set T05500 (medium, normal, 10 point) is available to your XPAF system.
- Make the AFP resources in IVPRESC available to XOSF using one of these methods:
  - Add IVPRESC to the XOSF start-up proc concatenation for the PDEFLIB (page definition), FDEFLIB (form definition), and OVERLIB (overlay) libraries.
  - Copy members from IVPRESC to the installation AFP resource libraries you have assigned to PDEFLIB, FDEFLIB, and OVERLIB. Copy the members with prefix P1 to PDEFLIB, F1 to FDEFLIB, and O1 to OVERLIB.

### *Printing the IVPs on A4 paper*

---

To print the IVPs on A4 paper, you must specify OPTIONS=A4 in the #GENRSC installation macro before generating stage 2 jobs for resource installation.

## Executing the XPAF IVP

---

You can execute the XPAF IVPs using either of these options:

- Batch jobs
- XOAF

### IVP batch jobs

---

IVP batch jobs are generated only if you specify YES and a print output class in the IVP parameter of the #GENRSC macro. Refer to "[Installation service macro worksheets](#)," for a description of the RSCIVP parameter and its values.

Submit the IVP job for the particular IVP you want to perform:

- IVPJOB01: Verifies XOAF batch processing
- IVPJOB02: Verifies line-mode processing
- IVPJOB03: Verifies DJDE and extended JCL processing
- IVPJOB04: Verifies XES processing
- IVPJOB05: Verifies page-format and extended JCL processing
- IVPJOB06: Verifies AFP and extended JCL processing
- IVPJOB07: Verifies pass-through processing

Successful execution of each IVP job is indicated by a return code of 00 with no error messages.

**Xerox Output Administrative Facility  
Installation Verification Procedure**

**OPTION   ====>**

1. Verify XOAF Batch Processing	5. Verify Page Format Processing
2. Verify Line Mode Processing	6. Verify AFP Processing
3. Verify DJDE/Extended JCL Processing	7. Verify Pass-Through Processing
4. Verify XES Processing	

SYSOUT Class:

Using A4 Paper? (Y/N):

**DATASET PREFIX**

    XPFLDAD Library:

    XINPARM Library:

Resource Libraries:

**JOB CARD INFORMATION:**


====> //JOBNAME JOB (ACCOUNT), ' NAME' , CLASS=A

====> /\*\*

====> /\*\*

====> /\*\*

Field	Description
<b>OPTION</b>	<p>Select the type of processing you want to perform.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>1 Loads a form to the centralized form library, then performs an LDM library directory display for that library.</li> <li>2 Tests line-mode processing.</li> <li>3 Tests DJDE and extended JCL processing.</li> <li>4 Tests XES processing.</li> <li>5 Tests page-formatted and extended JCL processing.</li> <li>6 Tests AFP and extended JCL processing.</li> <li>7 Tests pass-through document processing.</li> </ul>
<b>SYSOUT Class</b>	<p>For XPAF IVP testing only. Enter your job SYSOUT class (centralized or decentralized printer). If you select option 4 (Verify XES Processing), you must enter the SYSOUT class for a decentralized printer.</p>

Field	Description
<b>Using A4 Paper?</b>	<p>Indicate whether you are printing the IVP jobs on 8.5 by 11 inch or A4 paper.</p> <p>Valid values:</p> <p>Y Indicates the paper size is A4.</p> <p>N Indicates the paper size is 8.5 by 11 inches.</p> <p> <b>NOTE:</b> When using the option to print the DJDE IVP with extended JCL, the output for letter size and A4 paper is not identical. Text may be shifted slightly when it is printed on A4 paper.</p>
<b>DATASET PREFIX</b> <b>XPFLoad Library</b>	Enter the high-level and mid-level qualifiers for your system load library.
<b>XINPARM Library</b>	Enter the high-level and mid-level qualifiers for the library containing your initialization parameters.
<b>Resource Libraries</b>	Enter the high-level and mid-level qualifiers for your resource libraries, if different from your XPFLoad library.
<b>JOB CARD INFORMATION</b>	Enter your standard JCL job card information.

Press **ENTER**, and the second IVP panel appears:

Xerox Output Administrative Facility  
Installation Verification Procedure

OPTION ===>

C. Cancel JCL

E. Edit JCL

K. Keep JCL

S. Submit JCL

On this panel, select the option you want to use and press **ENTER**. Valid values are:

- C Cancels the generated JCL and returns to the initial Installation Verification Procedure panel.
- E Displays the generated JCL for editing purposes.

- K Keeps the generated JCL in a sequential dataset. After you save the JCL, you can access this dataset and submit the job without regenerating the JCL each time.
- S Submits the JCL. Standard TSO/ISPF JCL submission error or confirmation messages are displayed.



**NOTE:** You cannot use the END command or the PF3 key to exit this panel. If you want to return to the previous panel and do not want to display, submit or keep the JCL, you must enter **C** on the COMMAND line and press **ENTER**.

## Editing the JCL

If you enter E in the OPTION field on the JCL options panel, a panel the similar to this appears:

```
//job-name JOB job-information
//*
//*
//*****
//*   INSTALLATION VERIFICATION PROCEDURE - XOAJ1810   *//
//*                                                    *//
//*****
//*
//XOAFBAT  PROC
//XOAF      EXEC PGM=XOASUP00, REGION=1024K, PARM=(user id)
//STEPLIB DD  DISP=SHR, DSN=xpfload-library-name
//TABLELIB DD  DISP=SHR, DSN=font-table-library-name
//XINPARM DD  DISP=SHR, DSN=xinparm-library-name
//UJLLIST DD  SYSOUT=*, DCB=(RECFM=FBA, LRECL=133, BLKSIZE=1330)
//XOAPRINT DD  SYSOUT=*, DCB=(LRECL=121, RECFM=FB, BLKSIZE=6050)
//XOAIN DD  DDNAME=SYSIN
//*
// PEND
//*
//S1      EXEC XOAFBAT
LOAD FORM('resource-library-name.IVPXOAF(DJ3F)')
        ('resource-library-name.CFORMLIB(DJ3F)') CENT
//*
//S2      EXEC XOAFBAT
LIB DIR('resource-library-name.CFORMLIB')
//*
```

You can edit and save the JCL and cancel or submit the job using standard TSO/ISPF commands.

## Keeping the JCL

---

If you enter K in the OPTION field on the JCL options panel, this panel appears:

Xerox Output Administrative Facility  
Installation Verification Procedure

COMMAND   ===>

\* To keep the JCL, enter a new sequential dataset name.

Dataset Name:

Use this panel to complete this field and press **ENTER**:

Field	Action
Dataset Name	Enter the name of the sequential dataset that is not currently cataloged. This is the dataset in which your JCL will be stored.

To return to the previous panel, enter **END** and press **ENTER**.

```

Xerox Output Administrative Facility
Installation Verification Procedure

OPTION   ==>

1. Verify XOAF Batch Processing
2. Verify Line Mode Processing
3. Verify DJDE/Extended JCL Processing
4. Verify XES Processing

5. Verify Page Format Processing
6. Verify AFP Processing
7. Verify Pass-Through Processing


Subsystem:                               Using A4 Paper? (Y/N):

DATASET PREFIX
  XPFLD Library:
  XINPARM Library:
  Resource Libraries:

JOB CARD INFORMATION:
==> //JOBNAME JOB (ACCOUNT), 'NAME', CLASS=A
==> // *
==> // *
==> // *

```

## Section Two: Installing and Customizing XPAF (5/2001)

Field	Description						
<b>OPTION</b>	<p>Select the type of processing you want to perform.</p> <p>Valid values:</p> <ol style="list-style-type: none"> <li>1 Loads a form to the centralized form library, then performs an LDM library directory display for that library.</li> <li>2 Tests line-mode processing.</li> <li>3 Tests DJDE and extended JCL processing.</li> <li>4 Tests XES processing.</li> <li>5 Tests page-formatted and extended JCL processing.</li> <li>6 Tests AFP and extended JCL processing.</li> <li>7 Tests pass-through document processing.</li> </ol>						
<b>Subsystem</b>	<p>Enter these parameters:</p> <p>(<i>subsys-name</i>,<i>class</i>,,<i>printer-name</i>)</p> <p>where</p> <table> <tr> <td><i>subsys-name</i></td><td>The 1- to 4-character subsystem name as defined in the COMSSID parameter in the XINSXOSF member in XINPARM you created for CMA-SPOOL or CA-SPOOL.</td></tr> <tr> <td><i>class</i></td><td>The 1-character output class defined for the CMA-SPOOL or CA-SPOOL printer.</td></tr> <tr> <td><i>printer-name</i></td><td>The name of the printer to be used. The printer name must be defined in the printer profile library. If you select option 2, Verify XES processing, you must specify a decentralized printer.</td></tr> </table> <p>Example:</p> <p>SUBSYSTEM = (ESF,5,,PRT1652)</p>	<i>subsys-name</i>	The 1- to 4-character subsystem name as defined in the COMSSID parameter in the XINSXOSF member in XINPARM you created for CMA-SPOOL or CA-SPOOL.	<i>class</i>	The 1-character output class defined for the CMA-SPOOL or CA-SPOOL printer.	<i>printer-name</i>	The name of the printer to be used. The printer name must be defined in the printer profile library. If you select option 2, Verify XES processing, you must specify a decentralized printer.
<i>subsys-name</i>	The 1- to 4-character subsystem name as defined in the COMSSID parameter in the XINSXOSF member in XINPARM you created for CMA-SPOOL or CA-SPOOL.						
<i>class</i>	The 1-character output class defined for the CMA-SPOOL or CA-SPOOL printer.						
<i>printer-name</i>	The name of the printer to be used. The printer name must be defined in the printer profile library. If you select option 2, Verify XES processing, you must specify a decentralized printer.						
<b>Using A4 Paper?</b>	<p>Indicate whether you are printing the IVP jobs on 8.5 by 11 inch or A4 paper.</p> <p>Valid values:</p> <p>Y Indicates the paper size is A4.</p> <p>N Indicates the paper size is 8.5 by 11 inches.</p> <p> <b>NOTE:</b> When using the option to print the DJDE IVP with extended JCL, the output for letter size and A4 paper is not identical. Text may be shifted slightly when it is printed on A4 paper.</p>						
<b>DATASET PREFIX</b> <b>XPFLOAD Library</b>	Enter the high-level and mid-level qualifiers for your system load library.						
<b>XINPARM Library</b>	Enter the high-level and mid-level qualifiers for the library containing your initialization parameters.						

Field	Description
Resource Libraries	Enter the high-level and mid-level qualifiers for your resource libraries, if different from your XPFLoad library.
JOB CARD INFORMATION	Enter your standard JCL job card information.

Press **ENTER**, and the second IVP panel appears:

Xerox Output Administrative Facility  
Installation Verification Procedure

OPTION ===>

C. Cancel JCL

E. Edit JCL

K. Keep JCL

S. Submit JCL

On this panel, select the option you want to use and press **ENTER**. Valid values are:

- C Cancels the generated JCL and returns to the initial Installation Verification Procedure panel.
- E Displays the generated JCL for editing purposes.
- K Keeps the generated JCL in a sequential dataset. After you save the JCL, you can access this dataset and submit the job without regenerating the JCL each time.
- S Submits the JCL. Standard TSO/ISPF JCL submission error or confirmation messages are displayed.



**NOTE:** You cannot use the END command or the PF3 key to exit this panel. If you want to return to the previous panel and do not want to display, submit or keep the JCL, you must enter **C** on the COMMAND line and press **ENTER**.

## Editing the JCL

If you enter E in the OPTION field on the JCL options panel, a panel the similar to this appears:

```
//job-name JOB job-information
//*
//*
//*
//*****//
//*   INSTALLATION VERIFICATION PROCEDURE - X0AJ1810           *//
//*                                                           *//
//*****//
//*
//X0AFBAT  PROC
//X0AF      EXEC  PGM=X0ASUP00, REGION=1024K, PARM=(userid)
//STEPLIB DD   DISP=SHR, DSN=xpload-library-name
//TABLELIB DD   DISP=SHR, DSN=font-table-library-name
//XINPARM  DD   DISP=SHR, DSN=xinparm-library-name
//UJLLIST  DD   SYSOUT=*, DCB=(RECFM=FBA, LRECL=133, BLKSIZE=1330)
//X0APRINT DD   SYSOUT=*, DCB=(LRECL=121, RECFM=FB, BLKSIZE=6050)
//X0AIDN   DD   DDNAME=SYSIN
//*
//  PEND
//*
//S1      EXEC  X0AFBAT
LOAD FORM('resource-library-name.IVPX0AF(DJ3F)')
        ('resource-library-name.CFORMLIB(DJ3F)') CENT
//*
//S2      EXEC  X0AFBAT
LIB DIR('resource-library-name.CFORMLIB')
//*
```

You can edit and save the JCL and cancel or submit the job using standard TSO/ISPF commands.

## Keeping the JCL

---

If you enter K in the OPTION field on the JCL options panel, this panel appears:

**Xerox Output Administrative Facility  
Installation Verification Procedure**

COMMAND ==>

\* To keep the JCL, enter a new sequential dataset name.

Dataset Name:

Use this panel to complete this field and press **ENTER**:

Field	Action
<b>Dataset Name</b>	Enter the name of the sequential dataset that is not currently cataloged. This is the dataset in which your JCL will be stored.

To return to the previous panel, enter **END** and press **ENTER**.

## Executing the XDS IVP

Before you execute the XDS IVPs, be sure XDS is initialized.



**NOTE:** To ensure proper execution of the IVPs, submit each IVP job separately. Also, you must manually schedule the jobs.

To execute the XDS IVPs, enter **I** on the System Services panel OPTION line and press **ENTER**. This panel appears:

```

Xerox Output Administrative Facility
Installation Verification Procedure

OPTION  ===>


1. Verify XOAF Batch Processing      5. Verify Page Format Processing
2. Verify Line Mode Processing      6. Verify AFP Processing
3. Verify DJDE/Extended JCL Processing 7. Verify Pass-Through Processing
4. Verify XES Processing

      Subsystem:                      Using A4 Paper? (Y/N):

DATASET PREFIX
      XPFLoad Library:
      XINPARM Library:
      Resource Libraries:

JOB CARD INFORMATION:
===> //JOBNAME JOB (ACCOUNT), 'NAME', CLASS=A
===> //*
===> //*
===> /*
```

Use this panel to complete these fields:

Field	Description						
<b>OPTION</b>	<p>Select the type of processing you want to perform.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>1 Loads a form to the centralized form library, then performs an LDM library directory display for that library.</li> <li>2 Tests line-mode processing.</li> <li>3 Tests DJDE and extended JCL processing.</li> <li>4 Tests XES processing.</li> <li>5 Tests page-formatted and extended JCL processing.</li> <li>6 Tests AFP and extended JCL processing.</li> <li>7 Tests pass-through document processing.</li> </ul>						
<b>Subsystem</b>	<p>Enter these parameters: (<i>xds-name</i>,<i>printer-name</i>,'SEP=<i>x</i>') where</p> <table> <tr> <td><i>xds-name</i></td><td>The 4-character XDS subsystem name as defined in the SUBSYS parameter in the XINSXOSF member of XINPARM you created for XDS.</td></tr> <tr> <td><i>printer-name</i></td><td>The name of the printer to be used. The printer name must be defined in the XOSF printer profile library. If you select option 2, Verify XES processing, you must specify a decentralized printer.</td></tr> <tr> <td><i>x</i></td><td> <p>One of these values:</p> <ul style="list-style-type: none"> <li>J Produces job header and trailer pages.</li> <li>D Produces dataset separator pages.</li> <li>JD Produces both job header and trailer pages and dataset separator pages.</li> <li>N Produces no separator pages.</li> </ul> </td></tr> </table> <p>Default: N</p> <p>Example:</p> <p>SUBSYSTEM = (XOSF,PRT1652,'SEP=J')</p>	<i>xds-name</i>	The 4-character XDS subsystem name as defined in the SUBSYS parameter in the XINSXOSF member of XINPARM you created for XDS.	<i>printer-name</i>	The name of the printer to be used. The printer name must be defined in the XOSF printer profile library. If you select option 2, Verify XES processing, you must specify a decentralized printer.	<i>x</i>	<p>One of these values:</p> <ul style="list-style-type: none"> <li>J Produces job header and trailer pages.</li> <li>D Produces dataset separator pages.</li> <li>JD Produces both job header and trailer pages and dataset separator pages.</li> <li>N Produces no separator pages.</li> </ul>
<i>xds-name</i>	The 4-character XDS subsystem name as defined in the SUBSYS parameter in the XINSXOSF member of XINPARM you created for XDS.						
<i>printer-name</i>	The name of the printer to be used. The printer name must be defined in the XOSF printer profile library. If you select option 2, Verify XES processing, you must specify a decentralized printer.						
<i>x</i>	<p>One of these values:</p> <ul style="list-style-type: none"> <li>J Produces job header and trailer pages.</li> <li>D Produces dataset separator pages.</li> <li>JD Produces both job header and trailer pages and dataset separator pages.</li> <li>N Produces no separator pages.</li> </ul>						
<b>Using A4 Paper?</b>	<p>Indicate whether you are printing the IVP jobs on 8.5 by 11 inch or A4 paper.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>Y Indicates the paper size is A4.</li> <li>N Indicates the paper size is 8.5 by 11 inches.</li> </ul> <p> <b>NOTE:</b> When using the option to print the DJDE IVP with extended JCL, the output for letter size and A4 paper is not identical. Text may be shifted slightly when it is printed on A4 paper.</p>						

Field	Description
<b>DATASET PREFIX</b> <b>XPFLoad Library</b>	Enter the high-level and mid-level qualifiers for your system load library.
<b>XINPARM Library</b>	Enter the high-level and mid-level qualifiers for the library containing your initialization parameters.
<b>Resource Libraries</b>	Enter the high-level and mid-level qualifiers for your resource libraries, if different from your XPFLoad library.
<b>JOB CARD INFORMATION</b>	Enter your standard JCL job card information.

Press **ENTER**, and the second IVP panel appears:

**Xerox Output Administrative Facility**  
**Installation Verification Procedure**

**OPTION ===>**

C. Cancel JCL

E. Edit JCL

K. Keep JCL

S. Submit JCL

On this panel, select the option you want to use and press **ENTER**. Valid values are:

- C Cancels the generated JCL and returns to the initial Installation Verification Procedure panel.
- E Displays the generated JCL for editing purposes.
- K Keeps the generated JCL in a sequential dataset. After you save the JCL, you can access this dataset and submit the job without regenerating the JCL each time.
- S Submits the JCL. Standard TSO/ISPF JCL submission error or confirmation messages are displayed.



**NOTE:** You cannot use the END command or the PF3 key to exit this panel. If you want to return to the previous panel and do not want to display, submit or keep the JCL, you must enter **C** on the COMMAND line and press **ENTER**.

## Editing the JCL

If you enter E in the OPTION field on the JCL options panel, a panel the similar to this appears:

```
//job-name JOB job-information
//*
//*
//*
//*****//
//*   INSTALLATION VERIFICATION PROCEDURE - X0AJ1810           *//
//*                                                           *//
//*****//
//*
//X0AFBAT  PROC
//X0AF      EXEC  PGM=X0ASUP00, REGION=1024K, PARM=(userid)
//STEPLIB DD   DISP=SHR, DSN=xpload-library-name
//TABLELIB DD   DISP=SHR, DSN=font-table-library-name
//XINPARM  DD   DISP=SHR, DSN=xinparm-library-name
//UJLLIST DD   SYSOUT=*, DCB=(RECFM=FBA, LRECL=133, BLKSIZE=1330)
//X0APRINT DD   SYSOUT=*, DCB=(LRECL=121, RECFM=FB, BLKSIZE=6050)
//X0AIDN   DD   DDNAME=SYSIN
//*
//  PEND
//*
//S1      EXEC  X0AFBAT
LOAD FORM('resource-library-name.IVPX0AF(DJ3F)')
        ('resource-library-name.CFORMLIB(DJ3F)')  CENT
//*
//S2      EXEC  X0AFBAT
LIB DIR('resource-library-name.CFORMLIB')
//*
```

You can edit and save the JCL and cancel or submit the job using standard TSO/ISPF commands.

## Keeping the JCL

---

If you enter K in the OPTION field on the JCL options panel, this panel appears:

**Xerox Output Administrative Facility  
Installation Verification Procedure**

COMMAND   ===>

\* To keep the JCL, enter a new sequential dataset name.

Dataset Name:

Use this panel to complete this field and press **ENTER**:

Field	Action
<b>Dataset Name</b>	Enter the name of the sequential dataset that is not currently cataloged. This is the dataset in which your JCL will be stored.

To return to the previous panel, enter **END** and press **ENTER**.

## Verifying your output

---

When you perform the IVPs, check your output against the samples provided in this section and verify they are similar. Banner pages are not shown in the sample output; each job is separated by a cover page that indicates the type of processing by which the sample output is produced. At your site, these cover pages are replaced by your site-specific banner pages.

Sample output is provided for these types of processing:

- Line-mode
- DJDE and extended JCL
- XES
- Page format
- AFP
- Pass-through

The XOAF IVP does not produce printed output.



---

**NOTE:** If you are using the CD-ROM version of this document you must compare the IVPs printed from your system to the on-screen version of each IVP.

---

Your IVP output quality may vary, depending on the model of printer you use and its current print quality. Due to production variations when printing the IVP samples, your IVP output may not precisely match the samples provided.

After you have successfully run the IVP jobs, XPAF installation, CMA-SPOOL or CA-SPOOL setup, and/or XDS setup is complete. For information about using XPAF, CMA-SPOOL or CA-SPOOL, and/or XDS, refer to [Section Three: Managing Resources with XPAF](#) and [Section Four: Printing Documents with XPAF](#).

## Line-mode processing IVP sample output

---

The line-mode IVP sample is a single sided document similar to the sample on the next page.

Rainbow Office Supplies  
123 Sunshine Parkway  
Sandy Beach, FL 32111

July 3, 1996

Mr. Paul O'Hara, Manager  
Surf & Sand Hotel  
1000 Flamingo Drive, Suite B  
Salty Shores, FL 32110

Dear Mr. O'Hara:

We received a new shipment of window envelopes this week and wanted to let you know you could redeem your raincheck for this item. We now have enough of the item in stock to fill your order.

When you come in to redeem your raincheck, please let our staff know of any other office supply needs you may have. We will be glad to help you find any item in our store. If the item is not in stock, we'll be happy to order it for you.

Thank you for your patronage. We hope to see you soon.

Sincerely,

James Lemanski  
Store Manager



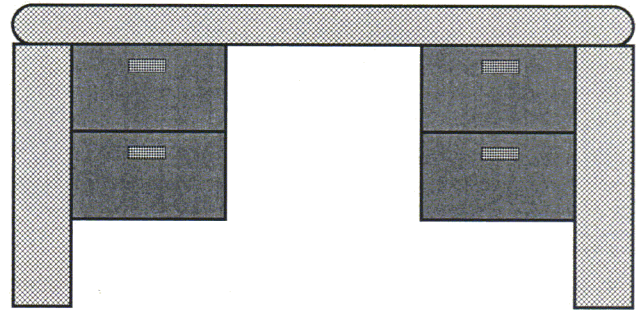
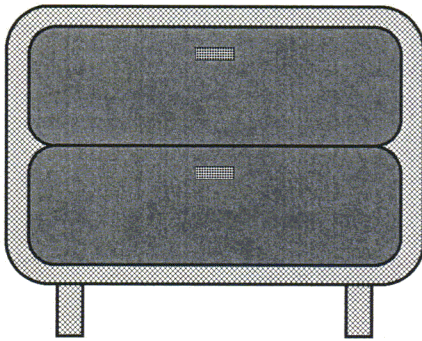
## *DJDE processing IVP sample output*

---

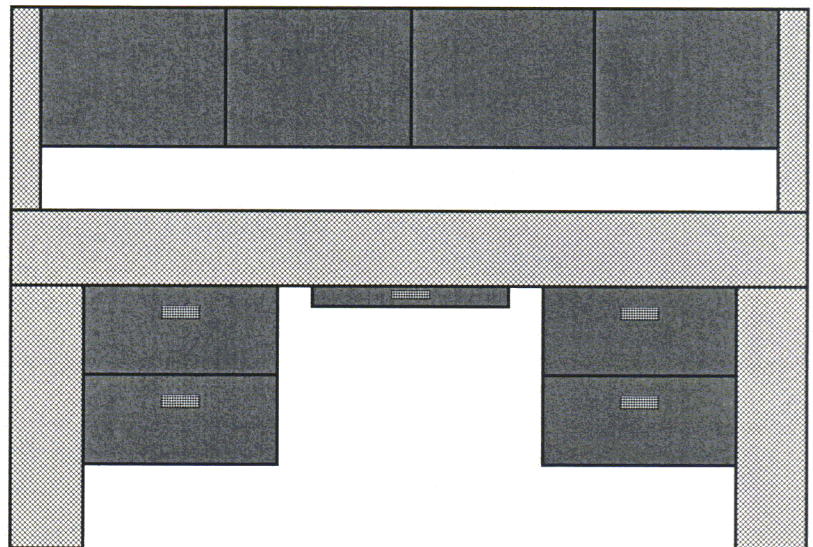
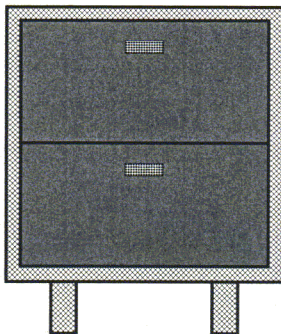
The DJDE processing IVP sample is a single sided document similar to the sample on the next printed page.



**A**



**B**



## CLASSIC DESK COLLECTION

### **A** Desker's Radius Edge Desk Collection

This collection includes a desk, credenza, book case, and matching lateral file in a light oak finish. Mar-resistant laminated surface with oak-veneered radius edges, with solid oak pull handles. Desk and credenza include locking mechanism for security. Drawers feature ball bearing suspension for easy opening.

Item	Description	Dimensions	List	Our Cost
DRE1204	Desk	29Hx71Wx36D	\$428.00	\$211.00
CRE1227	Credenza	29Hx71Wx20D	\$394.00	\$186.00
BRE1332	Book Case	42Hx36Wx18D	\$198.00	\$104.59
LRE1479	Lateral File	29Hx36Wx20D	\$436.00	\$234.00

### **B** Bennett's Mahogany Desk Collection

Individual pieces in a rich mahogany veneer include a single or double pedestal desk, credenza, hutch, book case, and two-drawer pedestal. Desk features a full modesty panel. A pull-out keyboard drawer is available for use with the desk and credenza. Pedestal comes fully assembled. Other items use our quick-lock steel clips for ease of assembly.

Item	Description	Dimensions	List	Our Cost
BSD-264M	Single Ped. Desk	29Hx68Wx34D	\$572.00	\$305.00
BDD-265M	Double Ped. Desk	29Hx72Wx34D	\$598.00	\$322.00
BCD-296M	Credenza	29Hx70Wx20D	\$526.00	\$284.00
BBD-351M	Book Case	44Hx34Wx18D	\$386.00	\$192.00
BPD 399M	2-Drawer Pedestal	28Hx38Wx16D	\$280.00	\$126.00
BHD-326M	Hutch	39Hx70Wx18D	\$422.00	\$208.00

Order by Fax: (999) 555-5636  
Order by Phone: (999) 555-5634



**RAINBOW OFFICE SUPPLIES**



## *XES processing IVP sample output*

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The XES processing IVP sample is a single sided document similar to the sample on the next printed page.





Rainbow Office Supplies

JUNE 1997

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					



## *Page Format processing IVP sample output*

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The Page Format processing IVP sample prints as two single sided documents similar to the samples on the next printed pages.



	Rainbow Office Supplies Phone Call Log for June 1996 Purchasing Department Ext.: 2120	
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Date	Number Dialed	Time	Mins	Charge
06/03	305-896-0110	9:38	3.41	.76
06/03	561-222-4844	10:14	2.18	.48
06/04	305-896-2506	1:17	10.25	2.26
06/05	561-222-9933	2:05	6.15	1.36
06/05	305-896-2562	3:14	10.11	2.23
06/06	813-636-2400	8:58	1.50	.33
06/06	561-222-7008	9:27	13.45	2.96
06/10	305-896-3200	9:56	5.04	1.11
06/11	305-896-2506	11:12	2.09	.46
06/11	407-804-3003	3:37	4.01	.89
06/12	305-896-2562	4:11	6.23	1.37
06/13	561-222-0620	4:27	4.44	.98
06/13	813-636-0027	4:52	11.26	2.48
06/14	305-896-8251	9:13	15.16	3.34
06/14	305-896-4354	10:09	2.50	.55
06/15	407-804-7777	10:23	12.57	2.77
06/16	305-896-6389	12:17	3.11	.69
06/17	305-896-0700	8:32	8.17	1.80
06/17	561-222-6363	8:54	11.22	2.47
06/18	305-896-2282	11:47	2.51	.56
06/26	407-804-9542	3:31	6.36	1.40
06/26	813-636-2459	3:41	4.41	.98
06/27	305-896-1166	9:19	5.52	1.22
06/27	305-896-1200	11:06	15.08	3.32

Rainbow Office Supplies  
123 Sunshine Parkway  
Sandy Beach, FL 32111



	Rainbow Office Supplies Phone Call Log for June 1996 Sales Department Ext.: 2175	
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Date	Number Dialed	Time	Mins	Charge
06/03	305-896-6020	8:30	4.52	.99
06/03	407-804-1932	9:57	3.16	.69
06/03	305-896-7780	10:14	11.49	2.52
06/03	305-896-0280	11:20	7.32	1.61
06/03	813-636-0990	2:50	28.11	6.18
06/04	305-896-5350	8:46	1.02	.22
06/04	561-222-3883	11:02	18.37	4.04
06/04	813-636-7710	1:16	4.24	.93
06/05	561-222-5860	8:37	6.53	1.43
06/05	407-804-1424	9:05	3.05	.67
06/06	305-896-2900	10:22	7.08	1.55
06/06	305-896-3842	11:32	5.38	1.18
06/06	561-222-1003	12:45	13.16	2.89
06/10	407-804-8251	8:05	19.48	4.28
06/10	561-222-1003	9:17	5.32	1.17
06/11	813-636-6020	10:44	15.41	3.39
06/11	561-222-1004	11:09	2.11	.46
06/13	305-896-8745	8:34	9.28	2.05
06/14	305-896-9000	9:01	13.55	2.98
06/14	407-804-3393	10:12	1.50	.33
06/15	305-896-7340	2:14	7.37	1.84
06/15	813-636-9542	3:11	5.01	1.10
06/18	561-222-0097	8:24	6.10	1.34
06/18	407-804-4640	9:08	40.05	8.81
06/19	561-222-4000	9:16	13.55	2.98
06/25	813-636-3393	10:38	1.50	.33
06/25	813-725-6600	1:07	7.37	1.84
06/26	813-636-2178	4:52	6.10	1.34
06/28	407-804-8745	8:29	9.28	2.05
06/28	813-725-6600	11:04	15.41	3.39

Rainbow Office Supplies  
123 Sunshine Parkway  
Sandy Beach, FL 32111

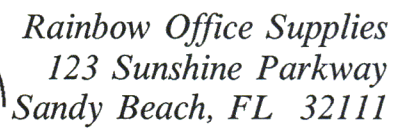


## *AFP processing IVP sample output*

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The AFP processing IVP sample prints as two single sided documents similar to the samples on the next printed pages.





Tom W. Smith  
1100-C Oak Avenue  
Sandy Beach, FL 32111

PAST DUE ON:	06/30/95
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PREVIOUS BALANCE	CHARGES	NEW BALANCE
\$ 57.46	\$ 62.89	\$ 62.89
PAYMENTS/CREDITS	FINANCE CHARGE	MINIMUM PAYMENT
\$ 57.46	\$ 0.00	\$ 10.00

Tom W. Smith  
1100-C Oak Avenue  
Sandy Beach, FL 32111

AMOUNT PAID: \_\_\_\_\_

ACCOUNT NUMBER: 53162581

*Rainbow Office Supplies*  
*123 Sunshine Parkway*  
*Sandy Beach, FL 32111*



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*Rainbow Office Supplies*  
123 Sunshine Parkway  
Sandy Beach, FL 32111

## Statement of Account

Virtual Computer Company  
Robert Shaw  
200 Main Street, Suite 100  
Sandy Beach, FL 32111

ACCOUNT NUMBER: 53268424

AMOUNT DUE: \$ 253.79

DATE DUE: 06/25/95

PAST DUE ON: 06/30/95

DATE	DESCRIPTION	CHARGES	PAYMENTS
05/20/95	Copy paper	\$ 25.40	
05/21/95	Toner cartridge	\$ 127.64	
05/24/95	Payment Received - Thank You		\$ 75.00
06/11/95	Pens, Note pads, Paper Clips	\$ 48.92	

PREVIOUS BALANCE

\$ 112.30

CHARGES

\$ 201.96

NEW BALANCE

\$ 253.79

PAYMENTS/CREDITS

\$ 75.00

FINANCE CHARGE

\$ 14.53

MINIMUM PAYMENT

\$ 50.00

Virtual Computer Company  
Robert Shaw  
200 Main Street, Suite 100  
Sandy Beach, FL 32111

Please Remit This Portion With Your Payment

AMOUNT DUE: \$ 253.79

AMOUNT PAID:

ACCOUNT NUMBER: 53268424

*Rainbow Office Supplies*  
123 Sunshine Parkway  
Sandy Beach, FL 32111



*Shop Rainbow Office Supplies for all your office needs*

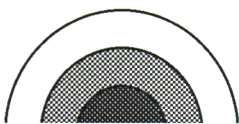


## *Pass-through processing IVP sample output*

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The Pass-through processing IVP sample prints as a single sided document similar to the sample on the next printed page





*Rainbow Office Supplies  
123 Sunshine Parkway  
Sandy Beach, FL 32111*

Congratulations on opening your new business. We at Rainbow Office Supplies wish you every success in the Sandy Beach area.

We invite you to visit our store for all of your office supply needs. Our friendly personnel can help you find whatever you need, from office furniture to computers to thumbtacks. Once you see the large selection of items we have, we feel sure that you'll think of Rainbow Office Supplies as your office supply headquarters.

To help you become better acquainted with our services, Rainbow Office Supplies would like to extend to you a special offer. Please bring the attached coupon to the store nearest you for a 20% discount on all items purchased during your first visit. We look forward to serving you on this and all future visits.

Sincerely,

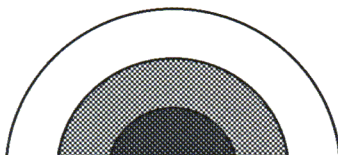
Pamela D. Greene  
General Manager

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## **First-Timer's Discount Coupon**

Bring this coupon for a 20% discount on all items purchased.  
Offer valid only on initial visit.

*Rainbow Office Supplies  
123 Sunshine Parkway  
Sandy Beach, FL  
(999)555-5634*



*Rainbow Office Supplies  
248 East Beach Drive  
Salty Shores, FL  
(999)555-9056*

