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New Project Guide and Checklist

When beginning a new project using one of the PRO products, please follow this guide to ensure that you have all of the necessary files and information to successfully transform the data. As you work through this process, we have assumed that you have been able to obtain the input data and/or resources from the host in the proper format. Use the checklist on page three of this document as you work through the steps in creating a new project.

Regardless of your input type, there are resources associated with any of the print formats we accept as input. The following lists the various resources associated with each input type:

- METACODE**
- fonts, stored as *.FNT on the printer
 - logos, stored as *.LGO on the printer
 - forms, stored as *.FRM on the printer
 - images, stored as *.IMG on the printer
 - JSLs, stored as *.JSL on the printer, including external PDEs, CMEs etc.

These resources should be extracted from the printer or host as binary objects and loaded on to the computer that will be running the transform. Note that for all JSL-type objects, we require the source code JSL files, not the compiled objects.

- AFP**
- coded fonts, usually stored as X0*, X1*, or XZ*
 - character sets, usually stored as C0*, CZ*
 - code pages, usually stored as T1*
 - page segments, usually stored as S1*
 - form definitions, usually stored as F1*
 - page definitions, usually stored as P1*
 - page overlays, usually stored as O1*

These resources should be extracted from host as binary objects and loaded on to the computer that will be running the transform. Note that for form definitions and page definitions, we require the compiled objects, not the source code. Furthermore, at this time we can only support fully composed AFP or mixed mode data. We currently do not support AFP line data, and will convert the line data into fully composed AFP pages using IBM's ACIF utility in order to process the data.

Note that on some systems, these resources may or may not have an extension on them such as .240, or .300, indicating the resolution of the resource. In this case, extract the resources that you are currently using on your production printer. These resources will need to be renamed to not have the extension on them for processing by ProAFP.

- PCL**
- macros
 - fonts

The process creating the PCL should be configured to include these resources inline with the print data, i.e. a single PCL file with no external resources necessary. Since most PCL print jobs use fonts stored on the printer and this can result in the same job printing differently on different printers, it is wise to use soft fonts when creating your PCL application and configure the job such that the fonts are embedded in to the PCL output.

Armed with this information, you can begin the steps necessary to transform a given print job to your desired output format. The following list details the tasks and materials necessary to do this successfully.

STEP 1: Obtain a suitable sample file for testing and print the file on the appropriate printer type. It is absolutely necessary to have original hardcopy of your test file for verifying your transform output.

STEP 2: Review the sample file and verify that the file has been downloaded from the host correctly. For Xerox Metacode data, see [Appendix 1](#) for further instructions on downloading data files correctly.

With PCL files, a simple binary transfer is all that is necessary to transfer files from the host. To verify your files, open the file in a HEX editor. You may see one of at least two types of PCL – older PCL files tend to be ASCII code, containing x'OD OA' at the end of each print line and x'0C' marking the page transitions. Newer PCL can be a mixture of ASCII and binary data and is recognized by the presence of x'1B' followed by PCL escape sequences. Currently, we support PCL5E at 600 DPI.

In the case of AFP files, again a simple binary transfer is required. The print records will be delimited by x'5A' followed by a 2 byte length field. If, instead of x'5A' you see x'21', the file has been downloaded incorrectly and translated to ASCII. In addition, if you see x'OD OA' sequences at the end of each print record, the file has been downloaded incorrectly and CRLF has been added. This is not a problem with our software as we can ignore these bytes but it is good practice to ensure that the file transfer process is performed correctly to avoid problems in the future. External resources are acceptable but if possible, process the data through ACIF and have the resources put in to a resource group at the beginning of the file. This can save time and trouble gathering all of the resources for a given print job. In addition, we do not support PAGEDEF's at this time and ACIF can process the PAGEDEF to create fully composed AFP. Currently, we support fully composed AFP (or MOD:CA) and mixed mode AFP but we do not support AFP line data.

In the case of metacode input data, it is impossible to say how it should look since metacode can take on many valid forms. Assuming that you have printed the data and copied the JSL source from the printer, check that the data file and JSL match. If the JSL specifies that the data is STRUCTURE=VB and you have CRLF, you must download the file from the host correctly. In some circumstances, it will not be possible to get a JSL and data that match perfectly. For example, online data extracted from the spool on MVS may have ANSI PCC's while the JSL specifies IBM3211 PCC's. This is because JES translates ANSI PCC's to IBM3211 as it transmits the data to the printer. It should never be necessary to modify a JSL to match the data except possibly in circumstances where it is not possible to extract the data at the correct point in its processing before it is finally transmitted to the printer.

STEP 3: Download all of the resources (if applicable) from the host or printer, making sure to have the correct versions of each that are used to print the job. These resources should be written to a directory that is accessible to the ProMeta software. **NOTE:** If you are copying Xerox printer resources to floppy disks, format and initialize the floppies on a Windows PC using Xerox compatible software before writing the resources to disks. Our experience has shown that floppies formatted on the printer are not readable on other platforms. If you are backing up a Xerox printer to tape, DO NOT use a DSR back up but rather, use file copy commands to write the resources to the tape.

STEP 4: Using our documentation and the examples contained therein, create a main configuration file or INI file. Familiarity with the data and how it is composed helps with this step as there are a number of configuration options that deal specifically with certain types of data or resources.

STEP 5: If your print job is metacode or LCDS and multiple JSL files are needed to print the job, use our PDL utility to create a system catalog.

STEP 6: Run the transform on the print job and verify the output against the hardcopy.

If the ProMeta output does not match the hardcopy, refer to your training materials for trouble- shooting procedures.

ProMeta New Project Checklist

As you work through the steps to create a new project, try to answer as many of these questions as possible. Your increased knowledge of the print job you are trying to transform will help if there are problems and will also make future projects progress more quickly and easily.

Table 1: For metacode or LCDS print jobs

<i>Input data type (i.e. Metacode or LCDS)</i>		
<i>Printer Start Command (if applicable)</i>	JDL=	JDE=
<i>Is there a "Switch-to" JDL/JDE?</i>	JDL=	JDE=
<i>Input file Record Delimiter (RDW, CRLF etc.)</i>		
<i>Resources downloaded?</i>		
<i>Simplex, Duplex, Mixplex hardcopy? Tumble?</i>		
<i>RPAGE, RSTACK, RTEXT, OFFSET used?</i>		
<i>Reverse text used?</i>		
<i>Inverse portrait, inverse landscape pages?</i>		
<i>CSF form fonts used?</i>		
<i>STOCKSETS or multiple trays used?</i>		
<i>Does input have multiple BEGIN's?</i>		
<i>Is this a highlight color application? If so, where is the color – FRM, LGO, IMG, or data?</i>		
<i>What ink catalogs, palettes and colors are used?</i>		

Table 2: For fully-composed AFP and AFP Mixed-mode print jobs

<i>Input data type (i.e. MOD:CA or Mixed-mode)</i>	
<i>Input file Record Delimiter (RDW, CRLF, fixed etc.)</i>	
<i>Resources downloaded? Resource group in input file?</i>	
<i>Simplex, Duplex, Mixplex hardcopy? Tumble?</i>	
<i>FORMDEF used?</i>	
<i>Reverse text used?</i>	
<i>Inverse portrait, inverse landscape pages?</i>	
<i>IOCA or GOCA used?</i>	
<i>Is this a color application? If so, where is the color - PAGESEG, OVERLAY, IOCA, GOCA, fonts?</i>	
<i>What colors are used? Are they RGB or one of the base-16 AFP colors?</i>	

Table 3: For PCL print jobs

<i>Input data type (i.e. PCL3, 4, 5 or 5e)</i>	
<i>Fonts embedded in PCL print file?</i>	
<i>Macros used? Are they embedded?</i>	
<i>Resources downloaded or written in to input file?</i>	
<i>Simplex, Duplex, Mixplex hardcopy? Tumble?</i>	
<i>Reverse text used?</i>	
<i>Inverse portrait, inverse landscape pages?</i>	
<i>Default Printer Font?</i>	
<i>Default Paper size? (e.g. Letter, Legal, A4)</i>	
<i>Is this a color application?</i>	

Appendix 1

Print File Management

This section covers the management of print files, both the Xerox print files that are transformed by Pro/Meta. It discusses topics such as file formats and downloading files from host computers. This section is very important and should be read before you begin to use Pro/Meta.

File Formats

This section describes some of the most widely used formats printed on Xerox printers, and transformed through Pro/Meta. The reason we focus on “most widely used formats” is that the Xerox printers can be programmed via JSL to handle an infinite number of file formats. It could take a volume of manuals to describe all of those possible formats, some of which are now obsolete. Instead we will concentrate on the most popular formats used in the market today. You can review the Xerox printer documentation for further details on these file formats.

The file formats can be divided into several categories:

1. Fixed length records
2. Variable length records
3. Blocked variable length records
4. BARR System/370 Format

In addition, all of these file formats can have some optional features and variations. Each of these files is a collection of data records. The records themselves can be further divided into fields. Some of the more important fields are:

1. User Print Data
2. Print Carriage Control (PCC)
3. Font Index
4. Ink Index
5. Unused data portion
6. Record Length field
7. Record Delimiter

Fixed Length Record Files

Fixed length record files are data files that are divided into records that all have the same length. There is no indicator inside the file as to what the record lengths are, so in order to use these files, the user must know what the implicit record length is.

Common record lengths are 80 bytes, 132 bytes and 133 bytes. However it must be kept in mind that the Xerox printers can handle files with almost any record length.

Variable Length Record Files

Variable length record files contain records that have lengths that may vary from other records in the file.

The length of a record in these files can be determined in many different ways. Depending on which system generated the file the record length “indicators” are different. Normally, this is defined in the Xerox JSL for the application. Common record length indicators are:

1. Binary Record length fields
2. Binary Record Descriptor Words (RDW)
3. Record Delimiters (Carriage Return/Line Field or any arbitrary sequence of bytes)

Blocked Variable Length Record Files

Variable length record files contain collections of records that have lengths that may vary from other records in the file. These collections are called blocks. When a file of this format is written to magnetic tapes, each block is written as one physical record on the tape. The length of blocks and records in these files can be determined in many different ways. Depending on which system generated the file the block and record length “indicators” are different. Normally, this is defined in the Xerox JSL for the application. Common block and record length indicators are:

4. Binary Block length fields
5. Binary Block Descriptor Words (BDW)
6. Binary Record Descriptor Words (RDW)

BARR System/370 Format

BARR System/370 format files contain a file header followed by variable length records.

These files can be identified by the 4 byte header at the beginning of the file. The file header begins with 2 bytes containing the hex value 761A. The records then follow the header in a structured format, which varies depending on the contents of the file header.

File Downloading

This section describes the guidelines to use when downloading print data streams from various systems and media. It discusses the downloading requirements to be used with the different File Formats described in the previous section. The following environments are discussed:

7. IBM Mainframe (S/370,S/390, etc)
8. IBM AS/400
9. UNIX (AIX,HP-UX,Linux,Solaris)
10. Magnetic tape

Please look at the section that is relevant to your environment.

IBM Mainframe (MVS, VM, DOS/VSE)

In an IBM environment, print files should be downloaded in a way that preserves the record structure and the contents of each record. To that end, EBCDIC data should NOT be translated to ASCII, as Pro/Meta is very good at processing EBCDIC data. It is important to note that Metacode Print Files, Printer Carriage Control bytes, Table Reference Characters, and Font Index bytes often contain binary data, which must not be translated or filtered when downloading. The following table summarizes the downloading options to be used when downloading files.

Dataset Type	Translation	Line Endings
Fixed Length (RECFM=F or FB)	NO	NO
Variable Length (RECFM=V or VB)	NO	CRLF or NO*
BARR	NO	NO

*Note: If a Xerox print file contains binary images, it is possible that the binary data may contain data that looks like a Carriage Return Line Feed. In these cases, Variable record downloading must be done differently. The RDW and BDW fields should be preserved and downloaded with the print data. This can be done using several different methods outlined below:

1. Tape transfer
2. IEBGENER
3. Vendor utility
4. CTIRDW REXX program
5. FTP (with options)

Tape Transfer

This is done by copying the dataset to a tape cartridge, transferring the tape cartridge to an target system with a tape cartridge reader and then reading the tape as a binary stream. In order to do this you need to have a tape drive available to the NT, Unix or Windows system which is compatible with a tape drive on the IBM Host.

IEBGENER

In some cases, you can use the standard IBM IEBGENER utility (or an equivalent). You must understand JCL and IBM utilities very well before you attempt this, however once done it makes a very good production-class solution.

In order for this to work, the dataset to be downloaded must be a record format U dataset, or you may be able to override the DCB in your JCL. You use IEBGENER to copy the VB dataset as a record format U dataset into a record format U dataset with the record length 4 bytes larger than the input dataset's block size and the block size 4 bytes larger than the new record length.

What happens is that IEBGENER looks at the RDW and BDW fields in the input dataset as user data, and just copies them into the new dataset. You can then download the new dataset as a binary dataset, and the resulting file on the PC will contain RDW and BDW information.

The following is an example of the JCL used to do an IEBGENER copy to add RDW/BDW information after running the Compuset formatter:

```

//STEP1 EXEC XICSCOMP,PROG=COMPSET
/*
//PICOMP.CSSIN DD DSN=PI28157.EDDSAMP.AUXCS004,DISP=SHR
/*
/*-----
/* EXECUTE XICS DSAVE -- CAPTURE OUTPUT FOR COMPARE
/* IF AN INVERSE FONT IS REQUIRED AN OVERRIDE IS NECESSARY
/*-----
/*
//STEP2 EXEC XICSXRXI,IPID=AU,PDEF=PDAU
/*
//PIXRXI.CSS03 DD DSN=PI24027.EDDSAMP.AUXOT004,
// DISP=(NEW,CATLG),
// SPACE=(CYL,(5,2),RLSE),MGMTCLAS=#DAY09,
// DCB=(BLKSIZE=254,RECFM=VB,LRECL=250)
//PIXRXI.SYSIN DD *
COPY 1
OPTN 0,0,1,0
/*
/*
//STEP3 EXEC PGM=IEBGENER
/*
//SYSIN DD DUMMY
/*
//SYSPRINT DD SYSOUT=*,DCB=BUFNO=1
/*
//SYSUT1 DD DSN=PI24027.EDDSAMP.AUXOT004,DISP=SHR,
// DCB=(RECFM=U)
/*
//SYSUT2 DD DSN=PI24027.EDDSAMP.REB.AUXOT004,
// DISP=(,CATLG,CATLG),
// MGMTCLAS=#DAY09,SPACE=(CYL,(5,2),RLSE),
// DCB=(BLKSIZE=262,LRECL=258,RECFM=VB)
/*
/*

```

Vendor Utility

Some vendors of composition software include utilities with their software that will ensure that the output datasets can be downloaded safely to the PC and Unix environments. One example is the DucuMerge utility called DFXVBPOT. You should consult your product documentation, and/or check with the Vendor's support people.

CTIRDW

The CTIRDW program is a REXX EXEC that is available from Crawford Technologies Inc. This program can be run under TSO or in a batch job. It copies the VB dataset into another dataset, copying the RDW information with each record. The dataset created can then be downloaded as a binary file. The result is a file that has the RDW information intact and can be easily processed by any of the Pro/Meta family of products.

FTP (with options)

The user will use FTP from a windows system in a DOS window. The process to download a dataset with RECFM set to V, VB,VBM or VBA called DatasetName to a DOS file Winfilename in RDW format is as follows:

C:>ftp host

Userid

password

bin

quote site rdw

get DatasetName Winfilename

This process does not require the use of CTIGENER or CTIRDW, so is ideal for Proof of concept data gathering.

For more information, contact Crawford Technologies Inc. or the vendor you obtained the Pro/Meta product from.

IBM AS/400

In an IBM environment, print files should be downloaded in a way that preserves the record structure and the contents of each record. To that end, EBCDIC data should NOT be translated to ASCII, as Pro/Meta is very good at processing EBCDIC data.

It is important to note that Metacode Print Files, Printer Carriage Control bytes, Table Reference Characters, and Font Index bytes often contain binary data, which must not be translated or filtered when downloading.

The following table summarizes the downloading options to be used when downloading files.

Dataset Type	Translation	Line Endings
Fixed Length	NO	NO
Variable Length	NO	CRLF
BARR	NO	NO

Print files can be extracted from the OS/400 print spool using the CPYSPLF function, specifying 'FCFC' control.

UNIX, AIX, HP-UX, Linux, Solaris

In a UNIX environment, print files should be downloaded in a way that preserves the record structure and the contents of each record. To that end, all Xerox print file should be preserved in the same format as they would be transmitted to the printer.

It is important to note that Metacode Print Files, Printer Carriage Control bytes, Table Reference Characters, and Font Index bytes often contain binary data, which must not be translated or filtered when downloading.

The following table summarizes the downloading options to be used when downloading files.

Dataset Type	Translation	Line Endings
Fixed Length	NO	NO
Variable Length	NO	LF
BARR	NO	NO

TAPE

Files on magnetic tape should be downloaded in a way that preserves the record structure and the contents of each record. To that end, EBCDIC data should NOT be translated to ASCII, as Pro/Meta is very good at processing EBCDIC data. All record formats can be treated the same way. They should be read as binary image streams. No modifications should be made to the files, as Pro/Meta expects the data in the same format that the Xerox printer gets it. In other words, you do not need a deblocker, as Pro/Meta does this itself. The following table summarizes the downloading options to be used when downloading files.

Dataset Type	Translation	Line Endings
Fixed Length (RECFM=F or FB)	NO	NO
Variable Length (RECFM=V or VB)	NO	NO
BARR	NO	NO