PCL-XL 2.0 Paper Handling ERS

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p1.6	Deleted reference to eMiddleCassette	02June1997	

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*** NOTICE ***

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BeginPage - Setting Media Size

Media size can be set three ways, Sending a string with the name of the media desired with the MediaSize attribute, sending an enumeration for a pre-defined media size with the MediaSize attribute, or using the CustomMediaSize attribute and a width and height of the media to be printed.

There are three cases in which PCL XL overrides the user's desired paper size. These cases are:

1) when the size specified is not a valid enumeration or the media name string is not found in the paper table.

2) when the size specified *is* a valid enumeration or name but not supported by the printer model that XL is running on. (In both of these cases PCL XL will use the default paper size specified by front-panel settings or via PJL.)

3) If a custom size is specified that is not supported by the device, the next larger supported size will be automatically selected.

A warning page will be printed at the end of any job where one or more of these cases occur.

MediaSize attribute

Currently we support enumerations for most popular paper sizes. When an enumeration is sent, XL converts it to the engine's internal code number,. XL then scans the internal list of supported and installed sizes for a match. If a matching list entry is found, XL extracts the dimensions it needs in order to generate a print image and the process continues. If a match is not found, XL selects the currenltly set default paper size, prints the page on that paper, and prints a warning page (assuming WARNINGS are enabled) at the end of the job. Each engine creates its own list of supported sizes each time it is turned on and this list will vary from printer type, configuration, options installed, etc.

If the engine supports paper sizes XL knows nothing about, these sizes cannot be selected by enumeration. Only by using the CustomMediaSize attribute (described later) or passing XL a name for the desired paper size..

Along with the code number and the size information, the engine also stores a name in its list for every paper size it supports. By scanning the engine's list for a name matching the one sent to XL by the user, the correct internal code number for that size can be obtained by XL and from that XL gains the information on size and format. This way XL can support paper sizes it currently knows nothing about but that future engines will supports.

Name	Enumeration	What it means
"A3"	eA3Paper	The imagable area for the page will be set to A3 paper size.
"A4"	eA4Paper	The imagable area for the page will be set to A4 paper size.
"A5"	eA5Paper	The imagable area for the page will be set to A5 paper size.
"A6"	eA6Paper	The imagable area for the page will be set to A6 paper size

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"B5 ENV"	eB5Envelope	The imagable area for the page will be set to B5 envelope size.
"C5"	eC5Envelope	The imagable area for the page will be set to C5 envelope size.
"COM10"	eCOM10Envelope	The imagable area for the page will be set to COM10 envelope size.
"DL"	eDLEnvelope	The imagable area for the page will be set to DL envelope size.
"EXEC"	eExecPaper	The imagable area for the page will be set to executive paper size.
"JIS B4"	eJB4Paper	The imagable area for the page will be set to JB4 paper size.
"JIS B5"	eJB5Paper	The imagable area for the page will be set to JB5 paper size.
JIS B6"	eJB6Paper	The imagable area for the page will be set to JB6 paper size
"JPOST"	eJPostcard	The imagable area for the page will be set to J postcard size.
"JPOSTD"	eJDoublePostcard	The imagable area for the page will be set to J double postcard size.
"LETTER"	eLetterPaper	The imagable area for the page will be set to letter paper size.
"LEDGER"	eLedgerPaper	The imagable area for the page will be set to ledger paper size.
"LEGAL"	eLegalPaper	The imagable area for the page will be set to legal paper size.
"MONARCH"	eMonarchEvelope	The imagable area for the page will be set to Monarch envelope size.

CustomMediaSize attribute

The Height and Width of a custom media size in units defined by the CustomMediaSizeUnits attribute. If a custom size is specified that is not supported in the printer, the next available supported size will be automatically selected and a warning page will be issued.

CustomMediaSizeUnits attribute

A enumeration for the unit of measure for the CustomMediaSize dimensions.

Enumeration	Description
eInch	Dimensions given are inches

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eMillimeter	Dimension given are in millimeters
eTenthsOfAMillimeter	Dimensions given are in tenths of a millimeter

In previous model printers, the user-supplied custom size dimensions were always converted to the next larger standard size that the printer supported. This behaviour was dictated by the lack of "adjustable" paper trays. Newer printers have adjustable trays and can accomodate paper of almost any width and depth. This dictated a change in XL's behaviour towards custom media sizes.

When a custom size is specified, XL now takes the dimensions sent by the user and querys the printer to be sure the hardware can print on that size paper. If the printer OKs the size, then XL processes and prints on the specified size paper.

If the printer does not accomodate the desired size, XL reverts to its old behaviour and will scan the printer's supported paper size list for the nearest size that the printer does support, print the job on that size paper, and, assuming warnings are enabled, issue a warning page at the end of the job.

BeginPage - Setting the media type

MediaType attribute

Media type is sent to the engine as a string "name". The information is used to select input trays and control fuser heat. With the exception of two cases, XL has no need for this information passes the tyep name directly to the personality. The attribute data type of ubyte_array is used to send the string name of the media type desired.

The two exception are:

1)"PrePunched" The 3-hole duplex rotate feature causes the language firmware to rotate a page's image 180 degrees when the paper is duplexed, the binding is long edge, the MediaType is "Prepunched", and the paper is landscape feed. Without this functionality, the user must physically rotate the paper in the tray when switching between simplex and duplex to ensure that the prepunched holes are on the correct side of a landscape fed page.

Support for 3-hole duplex rotate feature is product specific. That is, either a product supports the feature or does not support the feature. If a product supports the feature, it can not be turned off but can be controlled by controlling the criteria that trigger the firmware to rotate a page.

Portrait feed printers like Brundage are not impacted by this feature since they do not feed paper in a landscape direction (that is, long edge first). For landscape feed printers, the feature can cause rotated pages to be 1) stapled on the wrong side or 2) positioned incorrectly on preprinted paper like letterhead but the stapling of prepunched paper and the printing on preprinted prepunched paper are considered uncommon users needs. In these cases, the work around is to not set media type as prepunched and to go back the old method of physically rotating the paper in the trays when switching between simplex and duplex.

2) "Transparency" When the media type is specified as "transparency", all duplexing is automatically disabled. Any XL settings are shut off. To duplex transparent stock, a media type other than "Transparency" should be selected.

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The XL code does not do any other testing for the validity of the name sent down. This allows the engine code to deal with an unsupported or unknown media type, most commonly by prompting the user from the front panel for the indicated media type.

Paper Type Name	Description
"Plain"	Plain paper
"Preprinted"	Paper preprinted with forms or other text or graphics
"Letterhead"	Paper preprinted with a business letterhead
"Transparency"	Film used for slide presentations
"Prepunched"	Paper with holes for ring binders (See Note about 3-hole Duplex)
"Labels"	label stock
"Bond"	Quality paper
"Recycled"	Paper made from recycled materials
"Color"	Colored paper
"Card Stock"	Heavy paper used for cards, posters, etc.
"Rough"	Paper with a rough surface texture
"Vellum"	Drafting paper

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BeginPage - Setting the media source

MediaSource

The source from which the media will be pulled for a physical-media device. If not included, the device will use the most recent MediaSource setting by a BeginPage operator. If MediaSource has not been set by a BeginPage operator, or if the source requested is not supported, attached, or enabled, the device will use the device default setting and a warning page will be issued.

Standard destinations will be selected using enumerations listed below. External input trays on MoBY products are designated by a number between 8 and 255. This same number can be sent with the MediaSource attribute to select a specific external destination.

There are three cases in which PCL XL selects the paper source for the user. These cases are:

- when the user does not specify a media source.

- when the media source specified is not a valid enumeration or external bin value.

- when the media source is a valid enumeration or external bin number but not supported by the device.

In all cases, PCL XL will choose the last valid media source selected by a previous BeginPage or the default media source if the current page is the first page in the session. The default media source is specified by front-panel settings or via PJL. In the case of the later two items, a warning page will be issued at the end of the job.

Enumeration	Description
eAutoSelect	Automatically select the media source.
eDefaultSource	Choose the default media source.
eEnvelopeTray	Choose the media in the envelope tray.
eUpperCassette	Choose the media in the upper cassette.
eLowerCassette	Choose the media in the lower cassette.
eManualFeed	Choose the media in the manual feed source.
eMultiPurposeTray	Choose the media in the multi-purpose tray.
External Tray Number	A number between 8 and 255 that is device dependent. The number will be looked up in the device's InputTrayList for a match and used if the indicated input device is currently attached to the printer.

For HP LaserJet Printer devices, the MediaSource attribute is persistent through the end of the session unless overridden by another MediaSource setting on a successive page.

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BeginPage - Setting the media destination

MediaDestination

MediaDestination is a new attribute. Standard destinations will be selected using enumerations.

External output destinations on MoBY products are designated by a number between 5 and 255. This same number can be sent with the MediaDestination attribute to select a specific external destination.

If the destinations is not supported, attached, or enabled, the default destination will be selected and a warning page issued.

Enumeration	Description
eDefaultBin	Picks the current printer default bin for output
eFaceDownBin	Selects the Face Down bin, if supported, for output
eFaceUpBin	Selects the Face Up bin, if supported, for output
eJobOffsetBin	Selects the Job Offset bin, if supported, for output
External Bin Number	A Number between 5 and 255, device dependant, that denotes the number of the external output bin to be used. The number will be looked up in the device's OuputBinList for a match and used if the indicated output device is currently attached to the printer

For HP LaserJet Printer devices, the MediaDestination attribute is persistent through the end of the session unless overridden by another MediaDestination setting on a successive page.

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BeginPage - Orientation

Orientation Attribute

The print orientation of the logical page.

There is a case where the user specified orientation can be overridden, that case occurs when the page is duplexed, the binding is long edge, the MediaType is "Prepunched", and the paper is landscape fed. In this case, if ePortraitOrientation is specified by the user, XL will automatically convert this to eReversePortrait. Without this functionality, the user must physically rotate the paper in the tray when switching between simplex and duplex to ensure that the prepunched holes are on the correct side of a landscape fed page.

Enumeration	Description
ePortraitOrientation	Portrait
eLandscapeOrientation	Landscape
eReversePortrait	Reversed Portrait
eReverseLandscape	Reversed Landscape

BeginPage - Duplex selection

SimplexPageMode Attribute

An enumeration requesting that pages be rendered one page per physical media page and rendered on the front side of each physical media page. If not included, the device will use the most recent simplex/duplex setting by a BeginPage operator. If simplex/duplex has not been set by a BeginPage operator, the device will use the device default setting.

Enumeration	Description
eSimplexFrontSide	The default *and* the only selection available for the current devices.

DuplexPageMode Attribute

An enumeration requesting that pages be rendered on both sides of a physical media page and oriented for either horizontal or vertical binding of the physical pages. If not included, the device will use the most recent simplex/duplex setting by a BeginPage operator. If simplex/duplex has not been set by a BeginPage operator, the device will use the device default setting.

There is a case where the user specified duplex mode can be overridden. If the user specifies a MediaType and the type is "Transparency", then XL will automatically select eSimplexFrontSide.

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Enumeration	Description
eDuplexHorizontalBinding	Horizontal
eDuplexVerticalBinding	Vertical

DuplexPageSide Attribute

An enumeration specifying the side of the media on which the current page should be rendered. If not included, the device will use the most recent simplex/duplex setting by a BeginPage operator. If simplex/duplex has not been set by a BeginPage operator, the device will use the device default setting.

Enumeration	Description
eFrontMediaSide	Front
eBackMediaSide	Back

Assume the HP LaserJet Printer is in duplex mode and a change in MediaSource, MediaSize, or DuplexBinding occurs in BeginPage for the front side of a page. The HP LaserJet printer will send one blank page to finish the duplexed page. The new front page have the new BeginPage attributes.

Assume the HP LaserJet Printer is in duplex mode and a change for MediaSource, MediaSize, or DuplexBinding occurs in BeginPage for the back side of a page. The HP LaserJet printer will send two blank pages: 1) to finish the back side for the current page and 2) to provide a front side for the new back page having the new BeginPage attributes.

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Attribute Enumerations Table

The following are values used for enumerated data types through out this document. These enumerations are standardized across protocol classes. All values are listed in decimal form.

Attribute Name / Enumeration	Val	Class
DuplexPageMode		
eDuplexHorizontalBinding	0	1.1
eDuplexVerticalBinding	1	1.1
DuplexPageSide		
eFrontMediaSide	0	1.1
eBackMediaSide	1	1.1
CustomMediaSizeUnits		
eInch	0	1.1
eMillimeter	1	1.1
eTenthsOfAMillimeter	2	1.1
MediaSize		
eLetterPaper	0	1.1
eLegalPaper	1	1.1
eA4Paper	2	1.1
eExecPaper	3	1.1
eLedgerPaper	4	1.1
eA3Paper	5	1.1
eCOM10Envelope	6	1.1
eMonarchEnvelope	7	1.1
eC5Envelope	8	1.1
eDLEnvelope	9	1.1
eJB4Paper	10	1.1
eJB5Paper	11	1.1
eB5Envelope	12	1.1

Attribute Name / Enumeration	Val	Class
eJPostcard	14	1.1
eJDoublePostcard	15	1.1
eA5Paper	16	1.1
eA6Paper	17	2.0
eJB6Paper	18	2.0
MediaSource		
eDefaultSource	0	1.1
eAutoSelect	1	1.1
eManualFeed	2	1.1
eMultiPurposeTray	3	1.1
eUpperCassette	4	1.1
eLowerCassette	5	1.1
eEnvelopeTray	6	1.1
eThirdCassette	7	2.0
MediaDestination		
eDefaultBin	0	2.0
eFaceDownBin	1	2.0
eFaceUpBin	2	2.0
eJobOffsetBin	3	2.0
Orientation		
ePortraitOrientation	0	1.1
eLandscapeOrientation	1	1.1
eReversePortrait	2	1.1
eReverseLandscape	3	1.1