D. Known Extensions (optional)

D.1 Sun extensions:

from Jerry Jelinek (jerry.jelinek@central.sun.com)

D.1.1 Control File Attributes

These commands are not passed on. They do not map into any ISO DPA attribute, but may be used to control the implementation of the gateway.

Control file attribute:
H
S
U

These control file attribute map into the associated DPA attribute/value.

Control file attribute	DPA attribute value
C	job-comment
J	job-name
L	start-sheet yes
ISSUE: missing?	job-owner
M	notification-profile
N	document-descriptor
P	job-originator

These commands could be passed through by translating to the specified DPA attribute.

QUESTION: Do the line and ansi-cc values actually map to the meaning specified by the command?

Control file attribute	DPA attribute value		
f	document-format	?line	(control chars?)
l	document-format	?line	(control chars?)
o	document-format	ps	
r	document-format	?ANSI-cc	(FORTRAN?)

These commands should be filtered locally and resubmitted using one of the known types. There is no document-format type in the ISO DPA for these commands.

Control file attribute
c

d
g
n
p
t
v

The gateway must count the duplicate entries for each of the lower-case commands to determine the copy-count.

These commands are not passed on. They do not map into any ISO DPA attribute, but they are used by the gateway to control local filtering for the following commands c, d, g, n, p, t and v.

Control file attribute	I	T	W	1	2	3	4

The format for job queue output is not specified in RFC 1179. This is the format provided by the standard BSD print code.

D.1.2 Short Request (Command 3)

status\n
\n

Rank	Owner	Job	Files	Total Size\n
rank	*owner*	*id*	*file_list*	*size* bytes\n

additional lines, similar to the line above, one for each job

Column numbers of above headings:

0	0	1	3	6
1	8	9	5	3

status is a string explaining state.
"%s ready and printing" if jobs are active and no fault has occurred.
"no entries" if there is no activity.
Warning/Error message for other.

rank is either "active" or the order the job appears in the queue 1st, 2nd, 3rd, 4th, ... This can be no more than 7 characters wide.

owner is the job-owner. This can be no more than 8 characters wide.

id is be an integer 0-999.

file_list is a concatenation of the document-descriptors for documents contained in the job. The list can be no more than 40 characters wide.

size is the combined size in bytes of all documents and copies in the job.

D.1.3 Long Request (command 4)

status\n

\n

  owner: *rank* [job *id host*]

    file *size* bytes

    file *size* bytes

\n

  owner: *rank* [job *id host*]

    file *size* bytes

\n

additional lines, similar to the lines above, one for each job

status	See *status* entry in the table for short request
rank	See *rank* entry in the table for short request.
owner	See *owner* entry in the table for short request.
id	is be an integer 0-999; must be 3 digits, so add leading 0s if necessary
file	the name of the source file for a document in the job. This may also be "*n* copies of *f*" where *f* is the name of the source file.
host	the hostname of the submitting host.
size	the size of 1 copy of the document

each document in a job will have a (file) line for it in the output.

D.1.4 Extensions of Control File Attributes

Sun has defined the following extensions to the CF file. These extension enable the use of the lp options from SVR4 and XPG4 to be used within the BSD protocol. These extensions should also conform to extensions made by HP in their implementation of the BSD protocol.

We can discuss if we want to document how to map these extension into the DPA in the X/Open spec.

lp option	BSD Control File attribute	Description of Attributes
-f	5f*form*	print on form *form* where *form* is a character string indicating the form to use. e.g.: "A4"
-h	5h*handling*	hold job, resume printing, print job immediately. *handling* shall be one of hold, resume, or immediate

`-p`	`5n`*notification*	method and endpoint for notification when job completes or ends with errors. currently ignored. *notification* will be a character string consisting of two other strings *method*, *endpoint* and a separator "`:`". see Addendum e.g.: `xnotifier:1.2.3.4,6000-tcp`
`-P`	`5P`*page-list*	print on pages listed if you can. *page-list* is a character string consisting of numbers separated by "`,`", "`-`", and white space. e.g.: `1, 3-5, 7`
`-q`	`5q`*priority*	queue job with requests priority. *priority* is a character string representing an integer value between 0 and 39 inclusively. e.g.: `4`
`-S`	`5S`*char-set*	print job using requested char set. *char-set* is a character string representing. e.g.: `times`
`-t`	`5t`*content*	job is of *content* type. *content*) is a character string representing the type of data in the data files. e.g.: `PS`
`-y`	`5y`*mode*	print job according to mode if filter exists. *mode* is a character string.
`-o`	`O`*options*	use *options* for printer initialization. *options* is a character string representing a list of options. e.g.: `cpi=10` (used by HP-UX already)

4180 These command extensions map into the associated DPA attribute/value.

Control file attribute	**DPA attribute value**
5f	default-medium
5h	job-hold
5n	notification-profile
5P	page-select
5q	job-priority
5S	default-font
5t	document-format
5y	
O	
nobanner	start-sheet no
nofilebreak	NA
length	default-medium
width	default-medium
lpi	default-font
cpi	default-font
stty	NA
Sun extensions	
input	default-input-tray
output	output-bins
size	default-medium

res	printer-resolution-range-requested
portrait	content-orientation portrait
landscape	content-orientation landscape
sides	sides

D.2 SCO extensions:

from Lorie Goudie (lorie@sco.com)

D.2.1 General

'r': (currently sysV job id) is assigned to incoming jobs by our LPD spooler, so all jobs coming from a SCO LPD system will include a sysV job id. If it didn't have one, one will be assigned by the system.

Our implementation also does provide the correct interpretation (FORTRAN format) of the r flag plus a further interpretation. The further interpretation *job-id* will be moved to another letter.

Changing r to V or Y: We will change the r flag to V or Y. Does anyone have any strong opinion on which we should choose? I'm leaning to V (as in sys 'V' job id).

lpr, lpq, lprm: We don't ship these utilities (actually lpr is a link to the sysV lp). We use cancel, lp, lpstat. The LPD system only knows these interfaces.

4 digit control file names (a la HP): The daemon will probably get confused if it encounters a 4 digit control file when trying to display the print queue, cancel or move jobs.

Unrecognized control file codes: We ignore them all.

Required control file codes: One of the file type codes such as c, d, f, g, l, n, o, p, r, t, v, 1, 2, 3, 4. I believe H is required (as per RFC 1179) as is the P flag. Possibly also the N and U flags.

It appears that the N and U flags are always present in a control file generated from SCO lpr. In fact the N flag is ignored.

Non-conforming use of 'C': According to RFC 1179 the C *class-name* flag `is conventionally used to display the host from which the printing job originated.'

From this `definition' I would say that our implementation of the C flag is RFC 1179 conforming.

Missing from the summary table: The O flag is missing from the SCO line in the summary table as is the Q flag.

D.3 Xerox extensions:

from Irene Allen (iallen.wbst129@xerox.com)

D.3.1 General

Note: The media model embedded in Xerox lpr extensions is driven by media characteristics not names. This will make it tricky for software receiving an lpr request to translate into DPA media identifiers. Also, many of the media related options are a bit confusing because they include support for a few legacy products that did intersecting but not identical things. In the future we will be trying to clean this up without affecting clients already out there.

The Xerox implementation of lpr is based on the Solaris 2.3 sources. This version does not include the Sun -O extensions, which appeared in 2.4 or as patches to 2.3.

D.3.2 Class Options

Xerox options are embedded in the operand of the lpr -C option.

`Cclass(<XeroxOptionList>)classContinued`

Notes:

1. There is no fixed limit to the number of options in the <XeroxOptionList>. Although RFC 1179 indicates that this operand is limited to 31 octets, our implementor says that our implementation allows one to go way past it (not sure of any specific limit).
2. The <XeroxOptionList> ends at the first matching right parenthesis ")".
3. Everything outside that first pair of matching parentheses is treated as regular class nametext to appear on the banner page.
4. Unknown elements in the <XeroxOptionList> are ignored cause no error that would stop processing

Below is the syntax for the <XeroxOptionList>, i.e. the text in the first pair of matched parentheses.

```
<XeroxOptionList> ::= <option> | <option>, <XeroxOptionList>
```

D.3.3 Syntax for <option>

```
<option> ::=
     <accountOption>        /* DPA accounting-information */
   | <bindOption>           /*  DPA binding-edge */
   | <colorOption>          /*  Xerox DPA extension to be
                             *  registered.
                             */
   | <documentOption>       /* DPA document-format */
   | <fontNameOption>       /* DPA default-font */
   | <fontSizeOption>       /* ISSUE: No way to specify
                             * point size in DPA, but can
                             * specify lpp and cpl using
                             * Palladium extension length and
                             * width attributes
                             */
   | <lcdsIndexOption>      /* No DPA equivalent. Only valid
```

```
                                * with document-format = lcds.
                                */

    /* Note that media is specified by characteristics not
     * by name. All the media options override what's in pdl.
     * No clear DPA equivalent.
     */

    | <mediaSizeOption>       /* media size to use */
    | <mediaOpacityOption>    /* media opacity to use */
    | <mediaPrefinishOption> /* prefinished stock to use */
    | <mediaCustomOption>     /* information about custom media colors,
                               * types, etc
                               */

    | <orientationOption>     /* DPA content-orientation. Only
                               * used if pdl doesn't specify
                               * orientation (e.g. ascii or
                               * tiff).
                               */

    | <outputOption>          /* DPA Output attribute */
    | <outputOrderOption>     /* No clear DPA equivalent.
                               * Forces specific output
                               * order, overriding pdl.
                               */
    | <pagesOption>           /* DPA page-select */
    | <plexOption>            /* DPA  plex and sides (i.e.
                               * duplex always implies two
                               * sided)
                               */
    | <recipientOption>       /* DPA results-profile
                               * delivery-descriptor
                               */
    | <resolutionOption>      /* No DPA equivalent.
                               * Overrides pdl
                               */
    | <slipsheetOption>       /* DPA separator-sheet but no
                               * printing on it allowed
                               */
    | <stitchOption>          /* DPA job-finishing */
    | <xshiftOption>          /* DPA x-image-shift */
    | <yshiftOption>          /* DPA y-image-shift */
```

D.3.4 Details of the <option>s

```
<accountOption> ::= account = <TEXT>
                                /* DPA accounting-information */
<bindOption> ::= bind = top   /* DPA binding-edge
    |  bind = bottom
    |  bind = left
    |  bind = right

<colorOption> ::=  hc = <color>
                        /* Sets highlight printing color */
    | mc = <color>      /* Set the specified color as the
                         * reference color.
                         */
    | ms = <scheme>     /* Sets highlight color mapping
```

```
                          * scheme
                          */
    | hcm = <action>     /* Set highlight color mismatch
                          * action
                          */

<color> ::= <TEXT>       /* any color recognized by server
                          * or operator
                          */

<scheme> ::= monochrome |  pictorial
             |  table |  presentation
<action> ::=  abort      /* abort job */
            |  ignore     /* use available toner */
            |  operator   /* wait for operator intervention */

<documentOption> ::= postscript | ps | ascii | ip
                   | tiff | pcl | lcds
                /* need to register OID for lcds (laser
                 * conditioned data stream format).
                 */

<fontNameOption> ::= font = <TEXT>   /* DPA default-font */

<fontSizeOption> ::=   fontsize = <CARDINAL>
       /* ISSUE: No way to specify point size in DPA, but
        * can specify lpp and cpl using Palladium extension
        * length and width attributes
        */

<lcdsIndexOption> ::=    hipentry = <cardinal>
       /* Specify the Start Command Index  for LCDS jobs
       /* Only valid if the <documentOption> was
        * set to lcds
        */

<mediaSizeOption> ::= usletter|uslegal|tabloid
      |a0|a1|a2|a3|a4|a5|a6|a7|a8|a9
      |isob0|isob1|isob2|isob3|isob4|isob5|isob6|isob7
      |isob8|isob9|isob10
      |jisb0|jisb1|jisb2|jisb3|jisb4|jisb5jisb6jisb7
      |jisb8|jisb9|jisb10

<mediaOpacityOption> ::= opacity =  transparency
                       |  opacity = opaque
<mediaPrefinishOption> ::= <type> <holeCount> <orderedCount>
   <type> ::= plain | drilled | precut | plaindrilled
            | plainprecut | drilledprecut
   <holeCount> ::= <CARDINAL>   /* must be 0 or 3 */
   <orderedCount> ::= <CARDINAL>
                    /* 0 implies unordered stock,
                     * non-zero value indicates
                     * the repeat count for ordered
                     * stock
                     */

<mediaCustomOption> ::=
             media = <size>:<type>:<color>:<weight>
                 /* no spaces around colons are allowed */
   <size>   ::= <TEXT>   |  <NULL>
```

```
4369      <type>   ::= transparency | drilled | <TEXT> | <NULL>
4370      <color>  ::= <TEXT>  |  <NULL>
4371      <weight> ::= <INTEGER> |   <NULL>
4372           /* weight, in grams per meter squared */
4373
4374   <orientationOption> ::= portrait
4375                         | landscape
4376                         | inverseportrait
4377                         | iportrait
4378                         | inverselandscape
4379                         | ilandscape
4380                         | signature
4381                        /* (2 up signature only)  */
4382
4383   <outputOption> ::=   uncollate  /* DPA no-page-collate */
4384                      |  booklet
4385                         /* DPA Xerox-booklet-maker
4386                          * (fold, center stitch, and trim)
4387                          */
4388
4389   <outputOrderOption> ::= 1ton  |  nto1
4390              /* Forces specific page order, overriding pdl */
4391
4392   <pagesOption> ::= pagestoprint = <CARDINAL> < CARDINAL>
4393                       /* DPA page-select */
4394
4395   <plexOption> ::= simplex  /* Specify simplex printing. */
4396                  |  duplex   /* Specify duplex printing. */
4397                  |  tumble   /* Specify tumble duplex
4398                               * printing.
4399                               */
4400
4401   <recipientOption> ::= <TEXT>
4402             /* DPA results-profile delivery-descriptor */
4403
4404   <resolutionOption> ::= res = <CARDINAL>
4405            /* only valid values are currently 300 and 600 */
4406
4407   <slipsheetOption> ::= slipsheet
4408                  /* Specify slip sheets in between sets */
4409
4410   <stitchOption> ::= stitch = <stitchPosition>
4411      <stitchPosition> ::= singleportrait
4412                         | singlelandscape
4413                         | duallandscape
4414
4415   <xshiftOption> ::= xshift = <CARDINAL>
4416         /* Set horizontal image shift in millimeters. */
4417
4418   <yshiftOption> ::= yshift = <CARDINAL>
4419         /* Set vertical image shift in millimeters. */
```

D.4 IBM extensions:

from Tom Bilan (bilan@VNET.IBM.COM)

D.4.1 Control File Attributes

The following document defines the AIX lpd control file support.

The following documents the AIX LPD supported 1179 supported options:

option	AIX support	AIX Command
C	ok	lpr -C
H	ok	lpr -H
I	ok	lpr -I
J	ok	lpr -J
L	ok - internally set	
M	ok	lp -m lpr -m
N	ok - title information or file name	
O	not used/sent by AIX - ignored when received	
P	ok internally set	
S	not used/sent by AIX - ignored when received	
T	not sent by AIX - received as title	
U	ok internally set	
W	ok	lpr -w
1	ok	lpr -1
2	ok	lpr -2
3	ok	lpr -3
4	ok	lpr -4
c	ok	lpr -c
d	ok	lpr -d
f	ok - default	
g	ok	lpr -g
l	ok	lpr -l
n	ok	lpr -n
o	not supported - ignored when received	
p	ok	lpr -p
r	ok	lpr -f
t	ok	lpr -t
v	ok	lpr -v

The following defines extensions in the LPD control file created and used by AIX.

Option	Description
-N	number of copies
-T	title lpr -T lp -t qprt -T
-Z	mail address
-t	user name
-n	notification - same as M
-B	{aa | an | ag | na | nn | ng | ga | gn | gg}

Specifies whether burst pages should be printed.

-o options - see following section

AIX has added a significant number of extensions using the identifier of "-o" at the first field in the control file. The following section defines those extensions. It should be noted that the AIX print commands allow any test string to be entered on the command line. The string will be passed to in the lpd control file with as part of a -o line in the file.

D.4.2 -o Extensions

If the -o options duplicate the standard 1179 options, the 1179 option is passed along with the -o option.

>From the command line, any text string can be specified. The command string is passed a follows:

```
+----+-------------+----+
| -o | xxxx xxx xx | LF |   (where xxx is the string from the cmd line)
+----+-------------+----+
```

If the extension defined below does not include a value, the format in the control file is:

```
+----+----+----+
| -o | -x | LF |   (where -x is the option defined below)
+----+----+----+
```

If the extension defined below does include a value, the format in the control file is:

```
+----+----+----+
| -o | -x | LF |   (where -x is the option defined below)
+----+----+----+
+----+---+----+
| -o | x | LF |   (where x is the option's value defined below)
+----+---+----+
```

example: `lp ... -a1 -o"some text" ...`

The control file will contain:

```
       .
       .
       .
       .
+----+----+----+
| -o | -a | LF |
+----+----+----+
+----+---+----+
| -o | 1 | LF |
+----+---+----+
+----+-----------+----+
| -o | some text | LF |
+----+-----------+----+
```

4464 .
4465 .
4466 .
4467 .

4468 NOTE: The | separator indicates one of the values will is supported.

-o extensions	**definitions**
a {0 | 1}	Specified preview option
A {0 | 1 | 2 | 3}	Specifies the level of diagnostic output
b *Number*	Specifies the bottom margin
c	Specifies that the system copy each print file.
d {a | c | d | g | p | s}	Specifies data stream type
D *UserName*	Specifies user name for header page
e {+ | !}	Specifies whether emphasized print is wanted.
E {+ | !}	Specifies whether double-high print is wanted.
F *Name*	Specifies the name of X font files.
g *Number*	Specifies the page number where printing should begin.
G {+ | !}	Specifies page coordinate system.
H *Name*	Replaces the host name on the header page.
i Num*b*er	Specifies line indentation.
I *FontID*	Specifies a font identifier.
j {0 | 1 | 2}	Specifies whether the printer should be initialized before each file is printed.
J {+ | !}	Specifies printer restore option
k *Name*	Specifies the print color.
K {+ | !}	Specifies whether condensed print is wanted.
l *Number*	Sets the page length to the specified number of lines.
L {+ | !}	Specifies line wrap
m *Text*	Specifies console text message for print job
M *File*	Specifies that the message text file.
n	Specifies required notification
O {1 | 2 | 3}	Specifies the type of input paper handling.
p *Number*	Sets the pitch to Number characters per inch.
q {0 | 1 | 2 | 3 | 300 | 600}	Specifies print quality.
Q *Value*	Specifies paper size for the print job.
r	Removes the print file or files after the printing.
s *Name*	Specifies a type style with the Name variable.
S {+ | !}	Specifies whether high-speed printing is wanted.
t *Number*	Specifies the top margin.
T *Text*	Specifies a print job title with the Text variable.
u {1 | 2 | 3}	Specifies the paper source.
U {+ | !}	Specifies whether unidirectional printing is wanted.

`v` *Number*	Sets the line density to number of lines per inch.
`V {+ | !}`	Specifies whether vertical printing is wanted.
`w` *Number*	Sets the page width.
`W {+ | !}`	Specifies whether double-wide print is wanted.
`x {0 | 1 | 2 }`	Specifies automatic line feed & automatic carriage return
`X` *Name*	Specifies the code page name.
`y {+ | !}`	Specifies whether double-strike print is wanted.
`Y {0 | 1 | 2}`	Specifies duplex
`z {0 | 1 | 2 | 3)`	Specifies page rotation
`Z {+ | !}`	Specifies form feed command sent to printer after each file.

NOTE: The | separator indicates "or". One of the values will follow the = sign

The value will be on the same control file record.

For example:

```
+----+--------+----+
| -o | -bin=2 | LF |
+----+--------+----+
```

b={1 | 2 TO 255 | 65 | 100}

`bin={1 | 2 TO 255 | 65 | 100}`
Determines the printer input bin used for the print job.

`cd={850 | 437 | 860 | 863 | 865}`
`cdp={850 | 437 | 860 | 863 | 865}`
`cod={850 | 437 | 860 | 863 | 865}`
`codepage={850 | 437 | 860 | 863 | 865}`
Specifies the ASCII input code page used for the print job

`cop={1 to 255}` Specifies the number of copies for the print job.
`copies={1 to 255}`
`cha={name,name,...}`
`chars={name,name,...}`
Specifies the font file names

`datac={block | blkchar | blkpos | unblock}`
`datack={block | blkchar | blkpos | unblock}`
Determines what type of errors the printer is to issue.

```
datat={ascii | afpds | modcap | postscript | ditroff
          | dbcsascii | line}
datatype={ascii | afpds | modcap | postscript | ditroff
          | dbcsascii | line}
```

Specifies the type of the input data stream.

`di={distribution}`
`distribution={distribution}`
Specifies the distribution information that is printed
on header, separator, and trailer pages.

`do={jobname}` Identifies the document name or job name.
`docname={jobname}`
`jobn={jobname}`
`jobname={jobname}`

`du={no | yes | tumble}`
`duplex={no | yes | tumble}`
Specifies that the output prints as simplexed, duplexed, or tumble duplexed.
`f={name}`
`formdef={name}`
Specifies the name of the form definition the printer uses.
`h={yes | no}`
`header={yes | no}`
Specifies whether header pages are printed.
`msgc={9999 | 1 to 9998 | 0}`
`msgcount={9999 | 1 to 9998 | 0}`
Specifies the number of messages printed.
`pa={name}`
`pagedef={name}`
Specifies the page definition name
`pdeflib={pathlist}`
Specifies one or more paths the printer searches for the page definition.

`sep={yes | no}`
`separator={yes | no}`
Specifies whether the printer prints separator pages.
`sfd={pathlist}`
`srchfd={pathlist}`
`srchfdeflib={pathlist}`
Specifies one or more paths the printer searches for the form definition.

`sfo={pathlist}`
`srchfo={pathlist}`
`srchfontlib={pathlist}`
Specifies one or more paths the printer searches for the fonts.

`so={pathlist}`
`sov={pathlist}`
`srchov={pathlist}`
`srchovlylib={pathlist}`
Specifies one or more paths the printer searches for the overlays.

`sp={pathlist}`
`sps={pathlist}`
`srchps={pathlist}`
`srchpseglib={pathlist}`

Specifies one or more paths the printer searches for the page segments

`t={yes | no}`
`trailer={yes | no}`
Specifies whether trailer pages print after each file.

D.4.3 A sample control file

```
Hleo
Ptom bilan
JTitle for qprt
Chost name
Lbilan
I8
Mbilan
W5
f dfA471leo
UdfA471leo
NTitle for qprt
-othis is a test string from cmd line
-o-a
-o0
-o-A
-o2
-o-b
-o6
-o-d
-oa
-o-e
-o+
-o-E
-o+
-o-g
-o7
-o-G
-o+
-o-I
-o2
-o-j
-o1
-o-J
-o+
-o-k
-ored
```

```
4595      -o-K
4596      -o+
4597      -o-l
4598      -o9
4599      -o-L
4600      -o+
4601      -o-O
4602      -o1
4603      -o-p
4604      -o11
4605      -o-q
4606      -o3
4607      -o-Q
4608      -o8x11
4609      -o-t
4610      -o12
4611      -o-u
4612      -o1
4613      -o-U
4614      -o+
4615      -o-v
4616      -o6
4617      -o-V
4618      -o+
4619      -o-W
4620      -o+
4621      -o-x
4622      -o2
4623      -o-X
4624      -o850
4625      -o-y
4626      -o+
4627      -o-Y
4628      -o2
4629      -o-z
4630      -o3
4631      -o-Z
4632      -o+
4633      -ot=no
4634      -obin=2
4635      -osfo=pathname
4636      -odatack=block
4637      -N10
4638      -Zbilan@leo
```

```
4639      -ttom bilan@leo
4640      -TTitle for qprt
4641      -Baa
4642      -n
4643
```

4644 [End of LPD protocol extensions summary]

D.5 HP extensions:

from Todd Poynor (todd@hposl03.cup.hp.com)

D.5.1 4-Digit Job Numbers

HP preserves the System V-style 4-digit sequence number, or job number, in file names and attributes, while BSD uses 3-digit job numbers.

D.5.2 Control and Data File Naming Conventions

Control files are named in the following format:

`cA<seqn><host>`

<seqn> is the 4-digit sequence number (aka job number).
<host> is the originating host name.

The data file naming sequence format is:

`dA<seqn><host>`	through	`dZ<seqn><host>`	followed by...
`da<seqn><host>`	through	`dz<seqn><host>`	followed by...
`eA<seqn><host>`	through	`eZ<seqn><host>`	followed by...
`ea<seqn><host>`	through	`ez<seqn><host>`	... etc. ...

So the first data file name in a request begins with “dA”, the second with “dB”, the 27th with “da”, the 28th with “db”, and so forth.

D.5.3 HP-Specific BSD Job Attributes (Control File Lines)

The following control file lines are extensions of RFC-1179:

`R<login>`

Write to the named login’s terminal when the job is complete. This is an alternate to the RFC-1179-style e-mail completion notification. This notification is selected via the lp “-w” option.

`A<priority>`

Specifies the System V-style priority of the request, a single digit from 0-7.

`N B<banner>`

Note that this line begins with an “N”, a space, and then a “B”. The argument is the banner page title requested via the lp “-t” option. If that option was not given then the argument is null.

`N O<options>`

Note that this line begins with an “N”, a space, and then an “O”. The argument contains the System V-style “-o” options specified in the lp command line. The option names appear without a leading “-o”. The first option name begins in the fourth

character of the line; each option is separated by a blank. If no "-o" options were given then the argument is null.

The following control file lines are generated differently than in standard BSD:

J<jobname>

The argument is the System V-style request-ID, for example, "printer-42". Note that leading zeros are not present in the sequence number. If a System V-style title is requested then it is sent using a "N B" attribute, and not the "J" attribute.

D.5.4 HP System V-Style "-o" Options

The following are the "-o" options recognized by the PCL5-level model file currently shipped with the base HP-UX product.

D.5.4.1 Horizontal/Vertical Pitch Selection:

Option	Description
10	10 characters/inch (cpi)
12	12 cpi
c	compressed print pitch
e	expanded print pitch
fp#	set primary font pitch to # cpi
sfp#	set secondary font pitch to # cpi (may be floating point) (e.g. 16.66 = compressed)
hsi#	set horizontal spacing increment to # (#/120's inch) (e.g. hsi10 is the same as 12 cpi) (See your printer reference manual)
lpi#	print at lines per inch (default is 6 lpi)
vsi#	set vertical spacing increment to # (#/48's inch) (e.g. vsi4 is the same as 12 lpi) (See your printer reference manual)

D.5.4.2 Output filtering: (Default Cooked)

Option	Description
r | raw	raw mode for plotting mode etc.
n | nroff	set up to properly print output from nroff
pr	set up to properly print output from pr
rev	output pages in reverse order
a | ascii	print PostScript file as text

D.5.4.3 Print Spacing Selection:

Option	Description

psp	set primary font to proportional spacing
spsp	set secondary font to proportional spacing
fsp	set primary font to fixed spacing
sfsp	set secondary font to fixed spacing

4691 **D.5.4.4 Resolution Control:**

Option	Description
dpi#	set resolution to # (Supported values for # are :) (300 or 3 sets printer to 300dpi) (600 or 6 sets printer to 600dpi)

4692 **D.5.4.5 Font Selection:**

Option	Description
cs#	set primary character set to #
scs#	set secondary character set to # (See your printer reference manual) (for possible character sets,) (e.g. cs8U sets Roman 8 character set)
r8	Roman 8 character set
k8	Kana 8 character set
height#	set primary height to #
sheight#	set secondary height to #
style#	set primary style to #
sstyle#	set secondary style to # (possible values for style #) (0 = upright, 1 = italic, 2 = slant)
b | bold	set font stroke weight to bold (# = 1)
i | italics	set primary style to italic
si | sitalics	set secondary style to italic
upright	set primary style to upright
supright	set secondary style to upright
slant	set primary style to slant
sslant	set secondary style to slant
type#	set primary typeface to #
stype#	set secondary typeface to #
weight#	set primary font weight to #
sweight#	set secondary font weight to # (<0 = light, 0 = medium ,) (>0 = bold, typical range) (is -7 to +7 ; See your) (printer reference manual)

4693 **D.5.4.6 Page Length Selection:**

Option	Description

`l`*nnn*	set absolute length of page to *nnn* lines (default is 66)
`tl`*nnn*	set text length of page to *nnn* lines (default is 60 in portrait mode,) (45 in landscape mode)

4694 **D.5.4.7 Margin Selection:**

Option	Description
`lm#`	set left margin in column #
`rm#`	set right margin in column # (left most column = 0)

4695 **D.5.4.8 Paper Control: (Default single sided feed from paper cassette)**

Option	Description
`m | man`	set up for manual sheet feed
`d | double`	do automatic double sided printing * If your printer is not capable of duplex printing, use 'md' or 'mdouble' option.
`md | mdouble`	do manual double sided printing
`ub | ubin`	feed paper from upper cassette
`lb | lbin`	feed paper from lower cassette
`nb`	do not output banner page (to save paper)
`yb`	do output banner page
`P#[:#]`	print the pages from # to EOF or #:# to print a range of pages

4696 **D.5.4.9 Paper Control for Banner Page:**

Option	Description
`ubb | ubbin`	feed banner page from upper cassette
`lbb | lbbin`	feed banner page from lower cassette

4697 **D.5.4.10 Paper Control for Size:**

Option	Description
`legal`	set printer for legal size
`A4`	set printer for A4 size
`letter`	set printer for letter size

4698 **D.5.4.11 Dividing page: (Default normal)**

Option	Description
`half | 2`	double page with half size printing
`quarter | 4`	four times page with quarter size printing

Use of these options will negate the effects of the other options except for `rev`, `portrait`, `landscape`, `m`, `man`, `nb`, `d` or `double`.

4699 **D.5.4.12 Page Orientation: (Default portrait)**

Option	Description

`port	portrait`	portrait mode orientation
`land	landscape`	landscape mode orientation

4700 **D.5.4.13 Printer Language:**

Option	Description
`hpgl2`	set the printer to hpgl2-mode and reset it after printing (Orientation in landscape mode)
`hpgl2_p`	set the printer to hpgl2-mode, and reset it after printing (Orientation in portrait mode)
`ps	postscript`	set the printer language to PostScript
`pcl`	set the printer language to PCL

D.6 DEC extensions:

from Tom Hastings (hastings@cp10.es.xerox.com) (formerly at DEC)

D.6.1 General

The Digital extensions to the LPD protocol are:

Option	Description
<	input-tray
>	output-tray
A	first page
B	last page
D	document-format
E	message disposition
F	page size
G	number-up
K	sides
O	orientation - subset of Sun's O(options)
S	sheet size - conflicts with rfc 1179 S(Symbolic link data)
X	sheet - count (number of times each page is printed)
Z	length of page
x	native - don't filter anything
z	imposition file

The following is a more complete description of the options:

Option	Values	Description
Z*num*		Length. Changes the page length (in lines) used by text filters.
D*datatype*		Data type of the job
	ansi	ANSI data
	ascii	ASCII data
	postscript	PostScript data
	regis	REGIS data
	tek4014	Tektronix 4014
	xyz	You can specify other data types, but you must write an appropriate translator.
<*inputtray*		Selects the input tray that supplies paper for the print job.
	top	The upper 250-sheet tray.
	middle	The middle 250-sheet input tray.
	bottom or lcit	The large capacity input tray.
>*outputtray*		Selects the output tray where the printed paper is deposited.
	top	Top tray, with face-down stacking.
	side	Side tray, with face-down stacking.

	`face-up`	Side tray, with face-up stacking.
	`upper`	Upper tray if there are two trays on top of the printer.
	`lower`	Lower tray if there are two trays on top of the printer.
	`lcos`	Large capacity output stacker
O*orientation*		Specifies the orientation of the printed output on the page.
	`portrait`	The printed output is parallel to the short side of the page.
	`landscape`	The printed output is parallel to the long side of the page.
		For ASCII data type the format is controlled by width and length values supplied to the filter. If the width is greater than 80 columns landscape mode is selected. If only the Oorientation is specified, fixed values of width and length are used. These are as follows:
		portrait 80 columns and 66 lines
		orientation 132 columns and 66 lines
F*pagesize*		Specifies the size of the pages being printed.
	`letter or a`	8.5 x 11 inches, 216 x 279 mm
	`ledger or b`	11 x 17 inches, 279 x 432 mm
	`legal`	8.5 x 14 inches, 216 x 356 mm
	`executive`	7.5 x 10.5 inches, 191 x 254 mm
	`a5`	5.8 x 8.3 inches, 148 x 210 mm
	`a4`	8.3 x 11.7 inches, 210 x 297 mm
	`a3`	11.7 x 16.5 inches, 297 x 420 mm
	`b5`	7.2 x 10.1 inches, 176 x 250 mm
	`b4`	10.1 x 14.3 inches, 250 x 353 mm
S*sheetsize*		Specifies the physical size of the sheets being printed.
E*message*		Specifies what happens to messages when processing the print job.
	`keep`	Record the messages in the message file and mail the file to the submitting user.
	`ignore`	Do not record messages.
X*num*		Specifies the number of times each page is printed.
A*num*		Specifies the first page to be printed for the job.
B*num*		Specifies the last page to be printed for the job.
G*num*		Specifies the number of pa to be printed on a single physical sheet.
x*filename*		Do not interpret any control characters in the

		file.
z*filename*		Lay-up (imposition) definition file which alters the appearance of pages (number-up, margins, borders, etc).
K*sides*		Specifies whether the file shall be printed on both sides of the physical sheet, and whether the pages should be rotated by 180 degrees. (Combination of ISO DPA sides and plex attributes).
	`1` or `onesidedsimplex`	Print on one side of the sheet only.
	`2` or `twosidedduplex`	Print on both sides of the sheet; the second side is reached by flipping the sheet about its left edge, as in the binding of a book.
	`tumble` or `twosidedtumble`	Print on both sides of the sheet, but print the opposite way up on each side, so the second side can be read by flipping the sheet along its top axis.
	`onesidedduplex`	Print on one side of the paper only, but retain the page layout intended for two sided duplex printing. The layout refers to such things as where the margins are, and where the page numbers are.
	`onesidedtumble`	Print on one side of the paper only, but retain the page layout intended for tumble printing.
	`twosidedsimplex`	Print on two sides of the paper, but retain the page layout intended for one sided simplex.

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