UNIVERSITY OF EDINBURGH
Edinburgh Regional Computing Centre

User Note 71

Title:

Document Printers - Recent Changes

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Software Support Category: n/a

Synopsis

There have been a number of recent changes in the facilities and use of the network document printers. This Note describes them.

A new User Note (no 68) will be produced giving details of the character fonts and various facilities available on the recently acquired Xerox laser printer.

Keywords

character sets, document printers, dot matrix printer, .DP, DPLAY, DPLIST, fonts, GP300, laser printers, LAYOUT, NLAYOUT, OLAYOUT, SCRIBE, Xerox 2700

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1. The document printers (.DP15, .DP25, .DPERCC, .DP23)

The device mnemonic 'DP' stands for 'Document Printer'. Until recently, all document printers available on the ERCC network were Philips GP300 dot matrix printers. However, it was not intended that every .DP device would be a GP300 - it merely happened that this was the first printer identified as of a suitable quality.

The first non-GP300 document printer to be attached to the ERCC network is a Xerox 2700 laser printer; it is known as .DP23.

The intention is that the standard text formatting packages which currently generate output for the GP300 printers will be extended to generate output for the Xerox 2700 laser printer as well; in most cases this has already been done. Details of the changes required to users' input files in order to obtain laser printer output are given below for most of the packages in use. Please note, however, that because the character fonts currently provided on the laser printer do not in general correspond with those on the GP300s, a certain amount of 'manual' modification may be necessary.

The text formatting software and document printers are described as follows:

SCRIBE	EMAS Primer	User Note 66
	EMAS Ref Manual	User Note 67
	Unilogic User Manual	from ERCC Advisory service (£15.25)
	See also the EMAS MAIL Bulletin Board (named SCRIBE)	
LAYOUT	For users familiar with original Layout	User Note 42
	For users new to Layout	User Note 43
DPLIST	Description	User Note 48
Other packages	Refer to relevant systems support staff	
GP300	Fonts, etc	User Note 50
Xerox 2700	Fonts, etc	User Note 68

Users of Layout should note that section 2.4 below describes some additional facilities relevant to ALL users of Layout, not just those planning to produce laser printer output. Notes 42 and 43 will be updated shortly to include these facilities.

1.1 GP300 dot matrix printers (summary)

The GP300 printers on the ERCC network are known by the following device names:

.DP15	Job Reception, Room 3210, JCMB, KB
.DP25	Job Reception, Appleton Tower, George Square
.DPERCC	Job Reception, ERCC, KB

(Other GP300 printers are attached to the network and located in specific University departments.)

1.1.1 Default margins, etc

If a character file not produced by a text formatter and not containing any initial blank lines or left hand margin spaces is LISTed to a GP300 printer, the margins will be as follows:

Top margin	1" (approximately - depends on the top-of-form position set by the operations staff)
Left margin	0.75"
Lines per page	60 (at 6 lines per inch)
Bottom margin	2/3" (approximately - see 'Top margin')

If the file contains any codes before the first printable character which indicate that it has been produced by a text formatter, then up to 66 lines per page will be allowed before a new page is taken.

1.1.2 Fonts

The fonts available on the GP300 printers are described in ERCC User Note 50.

1.2 Xerox 2700 Laser Printer (summary)

A Xerox 2700 Laser printer is now available as network device .DP23.

The output is printed on separate A4 sheets. The standard orientation of the paper is long side vertical; this is known as 'Portrait' mode. It is also possible to print with long side horizontal - 'Landscape' mode. The character fonts available in these two modes are different.

The Xerox 2700 laser printer when used in Portrait mode is sometimes known as 'X2700', and when used in Landscape mode as 'LX2700'.

To cause a file to be printed in portrait mode (standard):

```
Command:LIST  file, .DP23
or Command:SEND  file, .DP23
```

To cause a file to be printed in landscape mode:

```
Command:LIST  file, .DP23,, 50
(SEND cannot be used in this case)
```

A maximum of 4 copies can be listed. Note that when charging is introduced (see section 1.3), it will be cheaper to obtain one copy on the laser printer and then photocopy that.

The quality (300 dots per inch resolution) and speed (up to 24 pages per minute) make it likely that it will become the preferred output device for many types of document. Further laser printers may be purchased, depending on the use made of this one, and its reliability. It is possible that other makes of laser printer will be purchased. These may have different character fonts, default margin settings, etc. and it is therefore advisable to make use of a text formatter which can handle several different types of device without requiring the user to make detailed modifications to his input file.

The formatter recommended by ERCC is SCRIBE, available on EMAS, on various DEC VAX 11 machines, on the SERC DEC-10, etc.

1.2.1 Default margins, etc

If a character file not produced by a text formatter and not containing any initial blank lines or left hand margin spaces is LISTed to a Xerox 2700 laser printer, the margins will be as follows:

X2700:	Top margin	5/6"
	Left margin	1"
	Right margin	1/4" (lines will be truncated if necessary to ensure a right margin of at least 1/4". Up to 84 characters @ 12cpi can be printed on each line, but using a maximum of 75 characters gives a right margin of 1" - the same as the left margin.)
	Lines per page	60 (@ 6 lines per inch)
	Bottom margin	5/6"

LX2700 (Xerox 2700 Laser Printer used in Landscape mode - see above):

Top margin	4/15"
Left margin	1/2"
Right margin	1/2" (thus allowing 132 characters @ 12.5cpi)
Lines per page	66 (@ 8.57 lines per inch)
Bottom margin	4/15"

These settings enable 66 lines of 132 characters maximum to be printed in the default Landscape font - XCP12.5iso. This is identical to most network line printers.

1.3 Real-money charging

A real-money charge of 4p per sheet is levied for all the document printers. The banner sheet on each job includes a statement of the cost of printing it. At the time of writing a method of charge collection from Edinburgh University departments is being negotiated, and until this is concluded the charges from such users will not be collected.

Private use of the facilities can be administered within normal accounting groups (e.g. by prior agreement with one's departmental administration), or, exceptionally, by taking out a private account code with ERCC.

No arrangement for private use by undergraduates has been established to date, but ERCC management is prepared to negotiate a procedure for this category of user if a single representative agency can be identified to operate as an undergraduate accounting group.

2 .DP23 (Xerox laser printer)

Access to the Xerox 2700 Laser printer is described in section 1.2 above. In brief, it is known as device .DP23 and is located beside JCMB Job Reception (Room 3210), King's Buildings.

2.1 Character fonts

The character fonts available with the Xerox 2700 laser printer will be described in detail in User Note 68. They are summarised in 2.1.1 and 2.1.2 below and in the accompanying tables.

It should be noted that the fonts available when the printer is used in Landscape mode (see section 1.2) are NOT the same as those available in the normal Portrait mode.

2.1.1 Portrait mode

The default font is called "Titan12iso". It is a 12 character per inch fixed-pitch serif font, similar to the Prestige Elite fonts widely available on typewriters and daisy-wheel printers. Single line spacing produces 6 lines per inch. This is the font which will be obtained if a standard character file is listed to .DP23 without any text formatter having been used. There is NO Portrait mode fixed-pitch sans serif font generally available on .DP23 (cf. Gothic 12 on the GP300 printers).

Six proportionally-spaced "Kosmos" fonts are provided, of varying sizes and boldness and including an Italic font. The intention is that text formatters will normally use this 'font family' for documents: "Kosmos10" for "running text", *"Kosmos10I"* ('I' for 'Italic') to go with Kosmos10, "Kosmos8" for subscripts and superscripts, **"Kosmos10B"** ('B' for 'Bold') for subheadings and emphasis within running text, **"Kosmos12B"** for headings, and **"Kosmos14"** for centred headings. The number within each of the font names gives the point size of the face - the larger the number the bigger the face.

A Roman (serif) font, "Computer Modern Roman11", and a matching italic font, *"Computer Modern Italic11"*, are also provided.

A mathematical symbol font, "SymbolC10", is also provided. Unfortunately it does not contain the same symbols, or with the same character codes, as the GP300 Scientific fonts. It is a 10 character per inch fixed-pitch font. It consists of:

✓•←→±∑^( )∞+′_~}0 1 2 3 4 5 6 7 8 9 °×Π°π{Ξ∇|ΨΦ÷<Λ¶}∫§

Ω∂↶↑ℓΓΘΣ™Ξ∝Δ∞Τ≈_`αβψφε>ληιʃκωμν↓ργθστξ†δχυζ¨

2.1.2 Landscape mode

The default font is called "XCP12.5iso". It is a 12.5 character per inch fixed-pitch sans serif font. Single line spacing produces 8.57 lines per inch. Note that no Landscape mode fixed-pitch serif font is currently available.

Six different proportionally-spaced "Kosmos" fonts are provided, of varying size and boldness, and including an Italic font. A Roman (serif) font and a matching Italic font are also provided. These fonts are in general 2 points smaller than the corresponding Portrait mode fonts, the purpose being to facilitate the printing of two A5 pages together on one sheet of A4; this avoids the need for photo-reduction when producing an A5 document.

Portrait fonts defined:

0 Titan12iso-P:

!"£$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
`abcdefghijklmnopqrstuvwxyz{|}~‾

1 Kosmos8-P:

!"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
'abcdefghijklmnopqrstuvwxyz{|}~

2 Kosmos10-P:

!"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
'abcdefghijklmnopqrstuvwxyz{|}~

3 Kosmos10B-P:

!"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
'abcdefghijklmnopqrstuvwxyz{|}~

4 Kosmos12B-P:

!"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
'abcdefghijklmnopqrstuvwxyz{|}~

5 Kosmos14-P:

!"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
'abcdefghijklmnopqrstuvwxyz{|}~

6 Kosmos10I-P:

!"£$%&'()+,-./0123456789:;<=>?*
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
`abcdefghijklmnopqrstuvwxyz{|}}

7 CompModRoman11-P:

!" £$%&'()*+,-./0123456789:;¡=¿?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^˙
`abcdefghijklmnopqrstuvwxyz{|}}

8 CompModItalic11-P:

!" £ $%&'()+,-./0123456789:;¡=¿?*
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^˙
`abcdefghijklmnopqrstuvwxyz{|}}

9 SymbolC10-P:

√•←→±∑^( )⊕+´ ‾ ~}0123456789°×∏®π{
≡∇|ΨΦ÷<Λ¶}∫§Ω∂√↑ℓΓΘΣ™Ξ∝Δ∞T≃ _
`αβψϕε>ληι∫κωμν↓ργθστξ†δχυζ¨ ‾

Landscape fonts defined:

0 XCP12.5iso-L:

!"£$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
'abcdefghijklmnopqrstuvwxyz{|}~

1 Kosmos6-L:

!"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^
'abcdefghijklmnopqrstuvwxyz{|}~

2 Kosmos8-L:

!"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
'abcdefghijklmnopqrstuvwxyz{|}~

3 Kosmos8B-L:

!"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
'abcdefghijklmnopqrstuvwxyz{|}~

4 Kosmos10B-L:

!"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
'abcdefghijklmnopqrstuvwxyz{|}~

5 Kosmos12B-L:

!"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
'abcdefghijklmnopqrstuvwxyz{|}~

6 Kosmos8I-L:

!"£$%&'()+,-./0123456789:;<=>?*
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
'abcdefghijklmnopqrstuvwxyz{|}}

7 CompModRoman9-L:

!"£$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^"
'abcdefghijklmnopqrstuvwxyz{|}}

8 CompModItalic9-L:

!"£$%&'()+,-./0123456789:;<=>?*
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^"
'abcdefghijklmnopqrstuvwxyz{|}}

9 SymbolC10-L:

√•↔→±∑^( )®+´_~}0123456789°×∏®π{
≡∇|ΨΦ÷<Λ¶}∫§Ω∂√†ℓΓΘΣ™Ξ∝Δ∞Τ≃_
`αβψφε>ληι∫κωμν↓ργθστξ†δχυζ¨

2.2 SCRIBE

The use of the text formatter SCRIBE (for all systems), when producing output for the Xerox 2700 laser printer, is as described in the existing documentation. The directive @DEVICE(X2700) must be specified at the start of the input.

Thus, to produce a document on device .DP23 (the laser printer):

Command:SCRIBE input file, output file

('input file' contains the line: @DEVICE(X2700))

Command:LIST output file, .DP23

An even simpler method is to nominate .DP23 in the SCRIBE command:

Command:SCRIBE input file,.DP23

It is not possible to produce Landscape mode output using SCRIBE.

2.3 DPLIST

The EMAS text formatter DPLIST is not yet able to produce output for the Xerox 2700 laser printer.

However, it is intended to provide a modified version of DPLIST within the next few months.

2.4 LAYOUT (DPLAY etc.)

The proportional spacing version of Layout is described in ERCC User Notes 42 and 43. A number of changes have been made to this version of Layout, and the Notes will be updated shortly to reflect this. In the meantime, the following is a summary of the changes:

The form of your call to the new version of Layout should be

Command:NLAYOUT .... / draft, document

'document' is intended to be listed to an appropriate printer. The type of printer which is to be used must be specified RIGHT at the start of the input, by assigning a value to a new parameter, DEVICE. Thus, for example:

$A DEVICE=GP300 (Philips GP300 printer)

$A DEVICE=X2700 (Xerox 2700 laser printer)

N.B. NO quotes should be given round the name on the right hand side.
Any parameter assignments before DEVICE will be ignored.

For compatibility with earlier versions of the proportional spacing LAYOUT, there are two other entry points:

1) DPLAY identical to NLAYOUT except that the default value of DEVICE is GP300.

2) SANLAY identical to NLAYOUT except that the default value of DEVICE is SANDERS.

Either of these entry point names can be used to process a file containing an assignment to the DEVICE parameter - it simply means that the default value implied by the entry point is overridden.

2.4.1 Recognised assignments to parameter DEVICE

LP DIABLO SANDERS GP300 X2700 LX2700

All but DIABLO and SANDERS are described below. The default value for DEVICE is LP.

LP Standard network line printer.
Default document page parameters (i.e., those parameters which determine the appearance of pages in the output document):

MARK=0; TOP=2; PAGE=60; BOTTOM=4; LEFT=0; LINE=72

Underlining and bold printing are dealt with by using Carriage Return and overprinting lines. Font changes and superscripts & subscripts are ignored.
Only one output file is produced when DEVICE=LP.

GP300 Output is intended to be listed on an ERCC network Philips GP300 dot matrix printer. At the time of writing there are three:

.DP15	Job Reception, Room 3210, JCMB, KB
.DP25	Job Reception, Appleton Tower Basement, G Sq
.DPERCC	Job Reception, ERCC, KB

(In addition some University departments have private GP300 printers.)
Provides for bold printing, underlining, superscripts & subscripts and multiple character fonts. Details of the available fonts are given in User Note 50.
Default document page parameters:

MARK=2; TOP=0; PAGE=60; BOTTOM=4; LEFT=5; LINE=72

The network GP300 printers produce output on separate sheets of A4 paper. These defaults cause each page of output to contain 60 6" lines of text centrally placed on the sheet.
Note that if LEFT is set to 0, a margin of approximately 2/3" is obtained (cf. X2700, below).

X2700 Output is intended to be listed on an ERCC network Xerox 2700 Laser printer. At the time of writing there is one:

.DP23	Job Reception, ERCC, KB

Provides for bold printing, underlining, superscripts & subscripts and multiple character fonts. Details of the available fonts will be given in User Note 68; they are summarised below.

Default document page parameters:

MARK=2; TOP=0; PAGE=60; BOTTOM=4; LEFT=14; LINE=72

Note that if LEFT is set to 0, NO margin on the A4 output sheets is given - the text is right at the edge of the paper (cf. GP300, above).

LX2700 Output is intended to be listed on an ERCC network Xerox 2700 Laser printer with forms queue 50 selected. This causes the output to be printed on the (A4) sheets of paper with long side horizontal (instead of long side vertical as usual). This orientation is known as 'Landscape'; the normal orientation is known as 'Portrait'.
Default document page parameters:

MARK=2; TOP=3; PAGE=66; BOTTOM=1.7; LEFT=8; LINE=132

When font 0 is used, these parameters enable 66 lines each of up to 132 characters to be printed on each sheet of A4 paper (i.e. a 'line printer substitute').

Note that when using DEVICE=LX2700, the output MUST be to a file which is then listed:

```
Command:NLAYOUT  input/draft, output

  (first line of file 'input': $A DEVICE=LX2700 )

Command:LIST  output,.DP23,,50
```

2.4.2 Other changes in NLAYOUT

The old LAYOUT (see 2.4.4) parameters FLIP (with directive $F), ELEFT and OLEFT are available; they were not available in a previous version of NLAYOUT.

The directive $R is available: $R3 causes the next text atom to FINISH at the 3rd tab position; $R0 causes the next text atom to be right justified on the current output line. ($R was not available in a previous version of NLAYOUT.)

A new parameter, PNFONT, is available, default value 0. It specifies the number of the font to be used when the page number is printed at the bottom of each output page (if requested via PAGENO).

The parameters determining dimensions in the output document (TOP, PAGE, BOTTOM, LINE, TAB, SGAP, etc.) can now be specified in inches instead of in units of the width of the space character of the current font. A double quotes symbol is used: $A LINE=6.5"; TAB=0.5",2.5",3.7"

This alternative method of specification is independent of the currently selected font.

2.4.3 LAYOUT-input file: modifications for different printers

In general, a standard set of fonts is not available on all printers and so font 1, for example, on one printer may be quite different from font 1 on another. This means that a Layout-input file prepared for one printer (a GP300, say) will not produce similar output on another printer (a Xerox 2700, say) by merely changing the assignment to parameter DEVICE at the start of the file.

To simplify such a conversion, a new directive, $D ('Define'), has been introduced. It is similar in use to $A; for example:

```
$D3 "Kosmos10B"
```

This is interpreted to mean that font 3 is henceforth defined to be Kosmos10B (a Xerox 2700 font). A fault will be flagged if the given font name is not available for the currently selected device.

At present only the GP300, X2700 and LX2700 devices have fonts with names which can be nominated in $D statements. The font name can be given in upper or lower case, and embedded spaces are ignored.

The $D facility is primarily intended to simplify conversion of GP300 documents to X2700 documents. For example, if GP300 fonts 14 (Orator ps), 2 (Gothic ps), 17 (Gothic Italic ps) and 6 (Courier 12) had been used in a document, the following $D directives inserted at the start of the Layout-input file

```
$A DEVICE=X2700
$D14 "Kosmos14"
$D2 "Kosmos10"
$D17 "Kosmos10I"
$D6 "Titan12iso"
```

would have the effect of using, on the Xerox laser printer, fonts similar to those previously used on the GP300 printer.

N.B. When carrying out a file conversion from GP300 to X2700, note the different effects of parameter LEFT:

The GP300 default for LEFT (LEFT=5) gives a left margin of about 1"

The X2700 default for LEFT (LEFT=14) gives a left margin of about 1"

Thus, in general, add 9 to any assignment to parameter LEFT when translating from GP300 to X2700. A reliable approach is always to change the value of LEFT by use of a RELATIVE assignment:

```
$A LEFT=+0.75"
```

This has the same effect on both printers.

2.4.4 Old Layout -> New Layout conversion

Users of LAYOUT on EMAS will be aware that there are currently two versions of the program - one which can produce documents for printers with one fixed-pitch character font, and one which can produce documents for printers with several character fonts, not necessarily fixed-pitch. The command names associated with these versions are OLAYOUT (previously LAYOUT), and NLAYOUT respectively. The NLAYOUT version can also be invoked using the names DPLAY or SANLAY, various parameters then being set to defaults appropriate to the GP300 printer or Sanders printer respectively.

This section describes a method for converting an OLAYOUT input file to the format required by NLAYOUT.

NLAYOUT differs from OLAYOUT in its interpretation of the input file, particularly in respect of underlining, some blank lines and some spaces at the beginning of lines. This is rather awkward when one wishes to convert an input file from old to new Layout, since some of the blank lines and leading spaces are significant; thus it would be wrong to remove all of them.

There are also complications with underlined text, as the parameters UND and UNDSH, causing underlining of a single symbol and of a word respectively, are replaced by UNDER and WUNDER, which do not work in quite the same way (see User Note 42 for details).

Recent changes to OLAYOUT now enable one to use the updated source facility to overcome these problems. The procedure is as follows:

1) Edit your OLAYOUT input file (OLFILE, say) so that the following line appears after all the $A statements at the start of the file:

```
$A INVO=0; CAPO=0; CAPSHO=0; UNDSHO=UNDSH
```

2) Give the command

    Command:OLAYOUT OLFILE/.NULL, NLFILE

3) This produces a second Layout input file, called NLFILE. NLFILE must be further modified before it is ready for processing by NLAYOUT: the line starting $A INVO=.... which was added to the original file is reproduced in NLFILE. It must now be replaced by an assignment to the parameter WUNDER, which should be set to the value given to UNDSH in file OLFILE (if it was given a value), or to the value '%' (otherwise).

4) Finally remove from NLFILE all references to parameters not provided in NLAYOUT:

    BODD, BEVEN, TODD, TEVEN, UND, UNDSH,
    all parameters with names ending '..O'

Once all this has been done, the result should be a reasonable translation of your original file into the format required by NLAYOUT, but no guarantees are given that it will work in every case. It is advisable to test the method on a test file of, say, 5-10 pages, before using it on a much larger document.

This method does not, of course, make use of any of the features in NLAYOUT which are not available in OLAYOUT (different fonts, bold printing, etc.). In order to make use of these features, it is necessary to modify the NLFILE appropriately - see User Note 42 for details.