DVItoVDU 3.0 and PSPRINT 3.0

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TEX at Aston University

In order to provide at Aston University an integrated text processing and publishing service with TEX/LATEX as one of the prime elements it was necessary to make changes to the software in use. This article describes the latest versions of PSPRINT and DVItoVDU which are part of the service.

Before describing the changes to the software a brief description of the environment in which they are to be used is necessary. Aston's computing facilities available for text processing comprise the following elements:

- A DEC VAX computer system running VMS.
- PostScript printers (various Apple LaserWriters and a Linotronic 300), some connected to the University network but all with the potential to be connected.
- MS DOS PCs and Apple Macintoshes connected to the network.
- Various workstations including Apollo and Sun.
- A Microtek scanner connected to the network.
- A site licence for PCTEX.

The intention is to permit users to prepare material on the most suitable device available, including terminals on VAX processors and eventually UNIX systems, to proofread and produce draft copies on the nearest suitable output device and where high quality is required transmit the final copy to the Linotronic 300. Users are not constrained to use TEX/LATEX provided that their favourite software is capable of generating PostScript.

Current projects at Aston University will mean that within the next three years every workplace will be connected to the network thus allowing devices currently restricted to a small group of users or a department to be made more widely available.

Changes to DVItoVDU and PSPRINT

DVItoVDU is an interactive page previewer that drives a variety of commonly available terminals. PSPRINT is a PostScript driver that supports a variety of PostScript printers and can print a DVI file, a raw PostScript program, or an ordinary text file. Both programs run under VAX/VMS and are in the public domain. They are available for FTP or mail access from the TEX archive at Aston. (Elsewhere in this issue is an article by Peter Abbott which describes how to extract material from the archive.) All the necessary files are kept in:

```
[public.trevorrow.vms.dvitovdu]
[public.trevorrow.vms.psprint]
```

A recent TUGboat article (vol. 8, no. 1) described DVItoVDU 1.7 and PSPRINT 1.1 and suggested that further development was most unlikely. This prediction was obviously a little hasty. Significant changes have been carried out in the UK, initially at The Open University and more recently at Aston University.

DVItoVDU 3.0

Here are the most important changes to version 1.7:

- DVItoVDU can now handle PostScript fonts, assuming you have the necessary TFM files. There is a new `/tfm_directory` qualifier to specify the location of these files. So DVItoVDU can recognize a PostScript font, the TFM name must start with a particular string. The new `/psprefix` qualifier allows sites to specify this string (the default prefix is "`ps-`").
- Added `ZI` (Zoom In) and `ZO` (Zoom Out) commands. The former halves the current window dimensions and the latter doubles them. Although the same effects can be achieved by appropriate use of `H` and `V`, the new commands require less contemplation.
- Any `\special` commands on a page are now displayed by the `S` command rather than at the time the page is interpreted. This is much less annoying for those documents with lots of `\special` commands.
- The limitation requiring all PK/PXL files to contain a size substring of the same length has been removed. Sites that had to include a leading zero in some font names to overcome this limitation must now rename them (e.g., `$rename *.0635pk *.635pk`).
- Added `/hoffset` and `/voffset` qualifiers to allow shifting of page margins.

PSPRINT 3.0

Here are the most important changes to version 1.1:

- PSPRINT now supports the Linotronic 300 and DEC's PrintServer 40 as well as the Apple LaserWriter. A new `/device` qualifier indicates which type of printer to use. A separate command file is activated for each device.
- PSPRINT can now handle resident PostScript fonts. Like DVItoVDU, new `/tfm_directory` and `/psprefix` qualifiers have been added.

- There are a number of other new qualifiers: `/conserve_vm` can be used to conserve PostScript's virtual memory at the expense of downloading character bitmaps more often; `/queue` allows users to override the default queue; `/output` copies the PostScript code generated by PSPRINT into a given file rather than sending it to a printer; `/two` and `/wide` are variants of `/text` that print two "pages" (60 lines by 80/132 columns) on each sheet of paper; `/reverse` and `/noreverse` override the device-specific order in which pages are printed; `/increment` simplifies the printing of documents on both sides of the paper; `/hoffset` and `/voffset` allow margin shifting.
- Some new qualifiers are device-specific: `/size`, `/lowres` and `/cutmarks` for a Linotronic, and `/nobanner` and `/manualfeed` for a LaserWriter.
- As for DVItoVDU, the limitation requiring all font files to contain a size substring of the same length has been removed.
- Error messages now appear in the log file if PSPRINT is used in a batch job.
- A single temporary file is now sent to the print queue. This simplifies the PostScript code required for `/text` jobs and overcomes problems caused by print symbionts adding unwanted characters (such as formfeeds/linefeeds) between files in a multi-file print job.
- The PostScript prologue files used to start each job have been thoroughly revised (after reading Adobe's *PostScript Language Program Design*).

Unix versions of DVItoVDU and PSPRINT

Unix versions of DVItoVDU and PSPRINT are also available in the Aston archive. The files are kept in:

```
[public.trevorrow.pyramid.dvitovdu]
[public.trevorrow.pyramid.psprint]
```

The work was done on a Pyramid running OS/x in the Maths department at the University of Adelaide. Since they didn't have a Modula-2 compiler, both programs were translated into reasonably standard Pascal (plus a tiny bit of C to handle low-level terminal i/o). It shouldn't be too difficult to modify the code for another Unix machine.

Note that the Pyramid versions are based on DVItoVDU 1.7 and PSPRINT 1.1 for VAX/VMS and so are a little out-of-date. In particular, they do not support the use of PostScript fonts. Also, the documentation is nowhere near as comprehensive.

Additional facilities

Additional facilities have been created during the update to version 3.0. Here is a summary:

- SCREENVIEW (a modified version of Mark Damerell's CrudeType) reads a DVI file and creates an ordinary text file. Its primary use is the production of help screens and printed output from the one TEX source file, but it can also be used as a simple previewer.
- HEXIFY reads a binary PostScript file created by VersaScan and creates a new, editable file that can be sent to a PostScript printer's serial port using PSPRINT. (VersaScan runs on a Macintosh and can save a scanned image as PostScript, but the bitmap data contains 8-bit bytes. This file can be Kermited up to a VAX but cannot be sent to a PostScript printer's serial port as some control characters, such as CTRL-D, have a special meaning to the interpreter. HEXIFY replaces each byte of bitmap data with 2 hex digits.)
- A5BOOKLET reads a DVI file and creates two new DVI files that can be used to produce an A5 booklet suitable for folding and stapling. It is assumed the given DVI file has a page format suitable for A5 paper. The A5BOOKLET command uses Tom Rokicki's DVIDVI program to do the required pagination tricks.

These additional facilities can be found in the Aston archive in:

```
[public.trevorrow.vms.screenview]
[public.trevorrow.vms.hexify]
[public.trevorrow.vms.a5booklet]
```

Conclusion

The facilities described above are only the first steps in producing an integrated environment. Much work remains to be completed and the major outstanding items seen at present are:

- A house style for internal documentation.
- Standards for student work submission.
- Improved local (online?) help facilities and user documentation.
- An independent seamless interface for the user. E.g., a consistent interface for PSPRINT and DVItoVDU on VAX/VMS and Unix systems.
- The preview of PostScript code on screens.

It is hoped to be able to report on the development of these goals in a future issue.