Site Reports

Notes from TEXhax

Malcolm Brown
TEXhax Moderator

Business is booming for TEXhax. The month of January alone saw six issues distributed. It's great to have such participation, and my thanks to everyone who's been contributing (especially to Barbara Beeton for preparing an index for the 1986 issues!).

A consequence of this is that most of my time is spent maintaining the distribution list and preparing the digests. This means that I have very little time for individual responses; indeed, most of the time I cannot respond. This doesn't mean I'm ignoring anyone, I just don't have enough time.

Anyone is welcome to submit any kind of TEX-related inquiry or insight to TEXhax. Inquiries should, however, be intended for the list generally and not addressed to the moderator personally. Questions that relate to TEX distribution should not go to TEXhax, but rather to TUG.

An informal poll was conducted last December regarding the format of TEXhax and the majority of responses favored retaining the digest format. Each digest is now formatted to allow automatic parsing. I'm trying to keep each issue reasonable in size. Currently 10K of material is "critical mass" for a TEXhax issue.

Finally, a reminder: all correspondence regarding changes to the distribution list should be addressed to `texhax-request@score.stanford.edu`. Submissions to TEXhax should be mailed to `texhax@score.stanford.edu`. This directs address changes and submissions to different files and makes things a bit easier to manage.

Editor's note: Back issues of TEXhax are available online at Score (a TOPS-20 system), and can be retrieved by anonymous FTP. The present naming convention is `<TEX>texhax`n`.87`, the n being the issue number. For 1986 issues, naming is more complicated: `texhax`n`.86`$mmdd$, with n again being the issue number (always 2 digits) and the extension, the date the issue was distributed.

Malcolm hopes to keep each issue online for at least a year, but that will depend on the volume of material.

We offer our heartiest encouragement and thanks to Malcolm for his diligent attention. It's really great to have TEXhax back on the air.

TEX&Co. on the ST, Part 2

Edgar Fuß
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When we decided to buy a couple of ST's in the beginning of 1986, our intention was to use them as some sort of super-intelligent terminal for our UNIX machine, i.e. to let the editor run on the terminal itself; the main field of interest of our company is software tools (surprise!) and database systems for UNIX.

As I had already been a TEX addict for several years but lacked a machine to run it on, and as there were at least two implementations for the IBM PC on the market, we said something like "if they can do it on the PC, it must be possible on the ST, too" and I began to think about TEX on the ST in the middle of January, 1986. As there was no suitable Pascal compiler on the ST (C compilers were no better), the process was not too straightforward and involved several different machines (including the ST in intermediate steps as well as the final result). Nevertheless, on April 26, the ST said "`This is TeX, Version 1.5 for the ST`" and — surprisingly enough — the program passed `TRIP` at the first attempt.

I then began to write a DVI driver, and as the task is essentially the same for any pixel-oriented output device like the screen or any matrix printer, we didn't adopt the usual "one printer, one driver"-method but instead wrote *one* driver for screen and *all* printers. This includes what is called 'preview' elsewhere, but as it appears to me to be the most natural thing to see one's TEX output on the screen — at least on a machine like the ST — I just call this a screen driver.

Fortunately this could be done on the ST itself; CCD Pascal turned out to be a useful tool since it allows you to call GEM directly from Pascal, generates reasonably compact code and compiles *fast*. The driver dealt with the screen with variable output size (using all kinds of GEM stuff like pull-down menus, windows, etc.) and some common matrix printers (Prism 132; Epson MX, FX; NEC P2 and compatibles) and used PXL fonts

in the first two releases because this was the only form amr fonts were available in.

Having finished the driver (a project requiring a good deal of knowledge of GEM 'logic' and its bugs), we began to deliver what we called Release 0.9 (TeX, version 1.5) in August last year.

The release of TeX, version 2.0, and the cmr inputs then made it possible to use Epson printers with their true resolution of $240 * 216$ dots and to generate fonts for high-resolution printers like the NEC P6. We therefore updated TeX and the driver (now including Epson LQ, NEC P5/6/7 and new low-resolution draft modes) and delivered Release 1.0 (TeX, version 2.0) in October, 1986.

Although the primary goal — providing a cheap implementation of TeX for a cheap machine — was now achieved, development continued. Astonishingly enough, there was a considerable demand among our customers for a laser printer driver (you get about 4 to 5 ST's for the price of a cheap laser printer here in Germany), so a LaserJet driver has recently begun producing its first output and adapting this driver to other laser printers seems to be only a matter of time. There were even enquiries for a phototypesetter driver, but this will probably take some more time.

I was quite surprised that our implementation has not only drawn the attention of universities — the customers I originally thought of — but also that of TeX newcomers who see they can do a little bit more with TeX than their favourite word processor was capable of...

Meanwhile, my colleague *Jürgen Keil* implemented **METAFONT** on the ST and somehow managed to cut down the per-font time from 2 hours to 12 minutes — we'll both have a look at ST-TeX's speed shortly (some people claim it's roughly as fast as on a VAX 780 — I can't fully believe this unless the VAX is heavily loaded, but anyway, I didn't do much about speed up to now).

We, ourselves, are curious to learn how fast we can make it, and the result of our efforts, together with the new driver now under test internally (supporting PK fonts etc.), will probably appear as Release 1.1 in the near future.

Data General Distribution News

Bart Childs

This is the status of the DG distribution:

1. We are running TeX 2.0. We just noticed from TeXhax that 2.1 is out and we will probably upgrade this week.
2. We have figured out how to preload TeX and are distributing all the packages in preloaded form.
3. **METAFONT** is working fine and is preloaded as well.
4. Our QMS drivers also use preloaded .TFM files.
5. We are in the process of changing all the main codes to use system calls for IO to speed things up. This is effectively using block IO.
6. We now have a driver for the DG-4558 laser printer. This is a fairly pure Canon engine, which causes some problems. It does not like characters whose size exceeds 64 pixels in either direction. We are planning on mixing bitmapping and font downloading to handle reasonable documents. It is written in WEB and I would appreciate a dialog with others who have attacked the same problem.

TeX82 and METAFONT84 Implementation for the HP1000 A-Series

Tor Lillqvist
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I have implemented TeX82 and **METAFONT**84 on the HP1000 A-Series computers running the RTE-A/VC+ operating system. (This is a totally different machine from the older E-Series, on which I think the previous TeX for HP1000 was implemented.) The code runs in CDS (Code/Data Separation) mode, no manual segmentation/overlay was necessary. All data structures are kept in EMA (Extended Memory).

The TeX82 implementation is fairly complete, e.g. it is possible to interrupt TeX while it is running. It passes the TRIP test. A kind of "preloaded TeX" is also implemented, using "shared EMA", the contents of which is saved to a file and restored by a small bootstrap program.

Here are the memory sizes used:

mem_max	32000
mem_min	−32000
buf_size	1000
error_line	79
half_error_line	50
max_print_line	79
stack_size	200
max_in_open	6
font_max	99
font_mem_size	30000
param_size	60
nest_size	40
max_strings	5000
string_vacancies	15000
pool_size	40000
save_size	600
trie_size	8000
dvi_buf_size	1024
file_name_size	64

TeX uses memory quite heavily, the code segment is 271 pages (1 page = 1024 16-bit words), EMA is 256 pages and the data segment is 29 pages, so you probably don't want to run it in a very small configuration.

A small change was necessary to the format of some binary files (`DVI`, `PXL`, `GF`) because of file system restrictions on RTE–A (you cannot know the exact (logical) size of a random-access file, so the first integer in these files contain the file size).

The speed of this TeX on an A900 is comparable e.g. to a VAX-11/750 or a PC AT.

The **METAFONT** implementation also works OK, but for some reason I am not able to use the same values for *mem_min* and *mem_max* as in TeX (−32000 and 32000). I haven't tried the `TRAP` test, but it processes the Computer Modern fonts without problems.

The current versions are: TeX82 2.0, **META-FONT**84 1.0, and Computer Modern fonts "5 changes after Version 1.0". The files were obtained from the Unix TeX distribution.

I have also written a `DVI` driver for the HP LaserJet+ printer, using the `DVItype` program as a base. The driver is written for the Pascal/1000 compiler and this TeX implementation, but should be portable to other reasonable compilers and implementations. (Volunteers are welcome!)

I have sent this TeX implementation to Interex (the International Association of HP Users) for redistribution, and Alan Whitney at the MIT Haystack Laboratory has it running. He might be willing to make tapes for Interex members. Requests can naturally also be directed to me; send a 2400 foot tape (or CS80 cartridge) and enough international reply coupons to cover the return postage. (Tapes are written in TF or TAR format.)

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Prime 50 Series Site Report

John M. Crawford
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Since my last site report, our TeX distribution tape has been altered to reflect the latest from Stanford. Namely, TeX 2.0 and **METAFONT** 1.0 are currently available, as well much of the other TeX project software.

We still don't have a wide variety of device drivers available. I believe most TeXing Prime sites are using the Texas A & M device drivers which work with the QMS QUIC laser-printers. I hope that by the end of the year, we will see a few more device drivers running on Prime hardware. If anyone has written or ported a device driver to Primos, and wants to have it added to the tape, please contact me.