

Site Reports

TeXhax returns

Editor's note: The following message arrived in electronic mail on September 23, 1986.

TeXhax "Neue Folge" Yr 86 Issue -1

This is a test run for the TeXhax distribution list.

TeXhax is about to get going again after more than a year of inactivity. I have worked through the very lengthy backlog of material and inclusion requests. The mailing list now reflects all changes and additions sent to `TeXhax-request` during that time. I suspect that a fair number of accounts that were on the original mailing listing are now no longer valid. Accordingly, I am sending around this dummy issue of TeXhax to 1) work out the kinks in the distribution table and 2) notify you of TeXhax' impending resurrection.

My name is Malcolm Brown. I am a consultant at Stanford and have been a member of TUG for several years. I'll be moderating TeXhax. Hopefully the first real issue will appear sometime next week.

Many thanks to Eric Berg at the Stanford Grad School of Business for assistance in working with the TOPS20 MM program!

Malcolm Brown

CDC Cyber Site Report

Jim Fox
University of Washington

The Office of Computing Services at the Georgia Institute of Technology has announced a port of TeX for the Cyber NOS/VE operating system. I have no details other than the person to contact. He is

Tharen Debold
Office of Computing Services
Georgia Institute of Technology
Atlanta, GA 30332-0275
(404) 894-4660
uucp: `tharen@gitpyr.uucp`
or `..!gatech!gitpyr!tharen`
Bitnet: `CC100TD at GITCDC1`

Porting TeX to the ATARI ST

Klaus Guntermann
Technische Hochschule Darmstadt

When ATARI came out with the 520 ST in 1985 we decided to buy some of them for use as a low cost raster graphics "terminal" for previewing TeX documents on its 640 × 400 dots black and white screen. Within 512 K bytes RAM memory which — at that time — was occupied by the operating system (about 200 K bytes) and the screen buffer (about 32 K bytes) it seemed to be impossible to run TeX. The 360 K bytes capacity floppy disks could not store such large programs either.

But soon there was a new version with 1024 K bytes main memory and double sided floppy disks with 720 K bytes capacity. That made a try to install TeX a challenging task. How fast would it be and could there be a floppy disk based TeX at all?

To complete our software toolbox we bought the ST development system including a C compiler and a lot of documentation. But we could not find a Pascal compiler for the ST powerful enough to compile TeX on the machine itself. Fortunately we had already a 68010 based TeX implementation on a multiuser system running MUNIX, a UNIX derivate operating system. The bugs of its Pascal compiler had already been circumvented by a lengthy change file. But there was no Pascal runtime system for the ST.

A close inspection of the MUNIX runtime system for Pascal showed that all necessary operations were done via the C runtime system and the system call interface. That suggested that we tried to combine the ST C runtime system and the MUNIX Pascal runtime system via some interface routines.

We sent the ST's C libraries via `kermit` to our MUNIX machine and developed two routines. One made the ST libraries look like a MUNIX library to the MUNIX loader, and a second converted the MUNIX relocation information into a format accepted by the ST loader. Again we were lucky that the subroutine calling sequence and the register usage of the ST libraries and the MUNIX compiler were compatible.

All the interfacing routines were written in C, because the MUNIX Pascal compiler allows C subroutine calls. The only part that had to be written in assembly language was the runtime startup that links the main program to the operating system, sets up the stack and the memory management.

In the last days of May, TeX (version 1.3) produced the first DVI output on the ST. A preview

installed on the MUNIX system and a printer driver for a dot matrix printer could be ported just the same way. The preview program required some additional changes because we wanted to make use of the ST's GEM interface, the pull down menus, file selector boxes and so on.

A "wizard" can use T_EX and the preview program even on a single drive system tailoring the set of on-line fonts to the texts he wants to process and swapping disks occasionally. A dual drive system allows complete "T_EXing". With the new packed font file format a reasonable set of fonts can be made available for previewing or printing in such an environment. The hard disk gives a speed up for loading T_EX (about 9 seconds compared to about 40–60 seconds for T_EX and FMT file) and faster access to fonts during preview or printer operation. Furthermore there is ample space for the complete font library in different magnifications for previewing as well as for printing on a dot matrix or laser printer.

Processing speed is comparable to the figures given by Tomas Rokicki in TUGboat Vol. 7, No. 2 for the Commodore AMIGA or the IBM AT if the hard disk is used.

For T_EX 2.0 we added some new features. Memory is allocated dynamically for T_EX such that there is no need to "unload" accessories that allow convenient access to useful features such as a desk top calculator or the standard VT52 terminal emulation (the memory occupied by them can only be freed by a system reset!), or to drop a RAM disk, just to process a small T_EX file. If the minimum amount of memory is available (given by the memory size of INIT_EX) T_EX can be loaded and started. But for large applications like L_AT_EX it is wise to free about 730 Kbytes to avoid a "sorry, T_EX capacity exceeded" message.

The table sizes for font information, string indices and the strings themselves can be selected either at runtime or a customized T_EX can be made by some simple patches to the object file.

In addition one may use the extended character set—with a lot of national characters—in a T_EX input file. This makes T_EX much more acceptable for a secretary who is used to type these characters if they are in the proper place on the keyboard, e.g. as it is in the German variant of the ST's keyboard. This is important especially in countries where accented characters or umlauts and the "sharp s" (ß) are very common in native language texts. The resulting loss of T_EX source interchangeability can be overcome easily by a small program that makes the necessary simple replacements to get the

standard 7 bit ASCII representation. This facilitates file transfer and processing by a "standard" T_EX on some other machine.

Unfortunately the inclusion of national characters does not solve the hyphenation problem for words with accented characters/umlauts. But we hope that there will emerge a widely accepted standard for extension of the fonts by accented letters soon. The new METAFONT can generate them and T_EX could access them via ligatures.

For more information about T_EX, preview and available printer drivers for the ATARI ST, please contact

Kettler EDV-Consulting
P. O. Box 1345, D-8172 Lenggries
Federal Republic of Germany
phone (49) 8042 8081

The plan to use an ATARI ST as a "terminal" to preview documents without a local T_EX has not been dropped. We hope to be able to report on such a distributed preview system in one of the next issues.

Editor's note: The TUG office has just been made aware of another implementation of T_EX on the Atari ST, by

Tools, Ltd.
Kaiserstraße 48
5300 Bonn, Federal Republic of Germany

More information can be obtained from Edgar Fuß at that address. An article is promised for the next issue.

MVS T_EX Site Report

Craig Platt
University of Manitoba

This is a short note to bring you up to date on my progress during the last year. I said in my last report (TUGboat Vol. 6, No. 3) that the MVS distribution tape should be available "Real Soon Now". Unfortunately I wasn't able to devote much attention to T_EX during the academic year due to other duties, but a summer of feverish activity has yielded some progress.

At the TUG meeting at Tufts, I received Don's approval of my TRIP test results for T_EX, version 2.0, as well as the TRAP results for METAFONT, version 1.0. (These tests had essentially been passed

much earlier, but this was the first time the results were presented for “official” approval.) I used the *ascii.tbl* file idea mentioned in my last report to allow creation of ready-to-run load modules for \TeX and its friends. I also made a slight change in the file naming conventions. An explicit “area” prefix, as in `texinput:story.tex`, will now cause a search for members `story` or `storytex` in a partitioned data set with `ddname TEXINPUT`.

Until recently I was planning to distribute the tape through Maria Code, but there are a couple of minor problems. Maria Code has informed me that due to a change in duplicating service, they can no longer copy tapes at 6250bpi. All their tapes are 1600bpi on 1200 foot reels. I estimate that the material I have so far will take up about 1500 feet of tape at 1600bpi. It would be possible to ship 2400 foot tapes, but it would be more convenient to use the higher density. There could also be problems with users requiring special formats, so I am considering the possibility of distributing the tapes myself, at least for a while. This would make it easier to keep things up to date, especially while they are still being developed. The major question is whether I can spare the time. Watch this space for further news.

For the time being, I will send my current tape-in-progress for a handling fee of \$50. This would be a standard label 1200 foot tape at 6250bpi containing a ready-to-run \TeX and \TeX ware, including `plain` format. Sample JCL for loading the files is included, as well as a brief installation guide. I expect that a site would be able to get \TeX up and running in a few minutes, after adjusting for the local character set.

I decided not to include $\text{AMS-}\TeX$ or $\text{L}\text{A}\text{T}\text{E}\text{X}$ format files (since I haven’t installed them here yet), but a ready-to-run `iniTeX` is included so a site can generate its own. All change files for the above are included, as well as ready-to-run versions of `TANGLE` and `WEAVE`.

These are followed on the tape by the complete sources from the 2.0 (generic) \TeX distribution from Stanford.

So—what am I waiting for? Here are a few things I hope to accomplish in the coming months.

- Ready-to-run **METAFONT**: I have included my change files for `METAFONT`, `GfType`, `GfToDVI`, and `GfToPXL`, so that a `WEB`-fluent installer could compile them, but I would like to add ready-to-run versions as well, with sample JCL for generating the `cmr` fonts.
- Device drivers: The current tape contains no drivers, except for the `dviimp.web` source from

the generic tape. I would like to include Pete Sih’s 4250 and 3800 driver software from the CMS tape, if it can be made to run under MVS. (Roger Fajman at N.I.H. is working on this.) Bart Childs has offered to send me his generic driver from the Data General tape. Written in `WEB`, it might be easy to convert it to run under MVS. Finally, Nelson Beebe has a driver family written in C, which might be made to compile under either Waterloo C or Lattice C (from SAS). In any case, these drivers can serve as models for further development.

- Performance: Even though \TeX and **METAFONT** pass the `TRIP-TRAP` tests, there is considerable room for improvement in speed. Chris Thompson at Cambridge sent me his change files, which contain several ideas I would like to incorporate, but haven’t had time to test.

Finally, I’m a little reluctant to announce this as the “official” MVS tape because of my inexperience about distribution matters. In addition to the *ascii.tbl* and file naming conventions, I’ve made a number of arbitrary decisions regarding tape formats and blocking factors, based on not much more than guesswork. I would like to get a bit more feedback on the current version, and I welcome comments from all about the appropriateness of my choices.

For the benefit of others trying to compile \TeX under `PASCAL/VS`, I should also mention a couple of bugs in release 2.2 of `PASCAL/VS`. When compiling \TeX , the translation phase of the compiler produced the message:

```
AMPT99S TRANSLATOR ERROR
***IN STMT 29 OF ROUTINE CLOSEFILESAN
```

The traceback showed this was related to routine `MERGE` in module `AMPTOPT`. The fix was forwarded to me by Roger Fajman, along with that for another error he encountered, but which didn’t affect my compilation. I will send these fixes to anyone who asks, and will include copies with the tapes.

To inquire about ordering, or about special tape formats, phone me at [204] 474-9832 during the day, or leave a message at 474-8703 and I will return your call. Please indicate the best time to call back. For network access, try

```
bitnet: platt@cc.uofm.cdn
csnet:  platt%cc.uofm.cdn@ubc
arpa:   platt%cc.uofm.cdn%ubc.csnet
        @csnet-relay
```

CMS T_EX Site Report

Alan Spragens
Stanford Linear Accelerator Center

The CMS implementation of T_EX version 2.0 was released shortly after the 1986 TUG meeting at the end of July. The tape includes TRIP- and TRAP-tested T_EX 2.0 and METAFONT 1.0 in "load-and-go" form for the CMS environment, the Computer Modern source files, and the rest of the standard T_EXware. Also included are Peter Sih's utilities to support the IBM 38xx and 4250 printers. Support tapes for these printers which will include pre-processed fonts are being prepared by volunteers at various sites and should be available soon. CMS TAPE DUMP format versions of the standard GF font tapes are also being made. CMS T_EX has been improved, made smaller and faster but with greater capacity in this version, due to refinements contributed by several people, notably Chris Thompson of Cambridge University, U.K. The CMS METAFONT is due to Bernd Schulze of the University of Bonn.

The new tape incorporates a new ASCII-to-EBCDIC translation scheme adopted at the 1985 TUG meeting which differs from the previous CMS tapes in two characters: the ASCII caret is translated to hex 5F (EBCDIC logical not sign) and the ASCII vertical bar to hex 4F (EBCDIC solid vertical bar). Although this convention is expected to be more acceptable than the previous scheme for most sites, the ASCII-to-EBCDIC translation will continue to cause some consternation and will need to be worked out at each site. A small XEDIT macro, TEXCHARS XEDIT, is included on the tape to update T_EX files prepared for CMS T_EX 1.1 so they will work with the new system.

Another change appearing in the new system is in the format of T_EX and METAFONT's non-text files such as DVI, GF, FMT, TFM, and BASE. All are now fixed record format with a record length of 1024 bytes. This should ease transfer of these files between various types of computers and allow programs which read and write them to handle the task in a more consistent and efficient way.

Editor's note: After several years of duty as the VM Site Coordinator, Alan is moving on. The new Site Coordinator is by no means a new face to the T_EX community:

Dean Guenther
Computer Service Center
Washington State University
Computer Science Building, Room 2144
Pullman, WA 99164

509-335-0411

BITnet: Guenther@WSUVM1

Best of luck to both Alan and Dean.

Typesetting on Personal Computers

Real Typesetting from Your Personal Computer

Alan Hoenig and Mitch Pfeffer

T_EX's ultimate goal is real typesetting. Now, 300 dpi laser output does look great, but Alfred A. Knopf would not find it acceptable for true camera-ready publication quality. You could have satisfied the late Mr. Knopf by exploiting the device independence of DVI files, and ship these to someone for output from a real typesetting machine. There are a handful of bureaus that perform this service for you, and the purpose of this column is to list them for you, with some facts and figures about each. We play no favorites; the organizations are listed below in strictly alphabetical order.

Please—if any readers know of organizations inadvertently omitted from this list, do get in touch with us; we'll run an update in a future column. If anybody knows of a printer manufacturer willing to support T_EX output on their devices, please get in touch with either of us or with Barbara Beeton at the AMS.

Firms dealing with Autologic equipment can currently only deal with the AM (Almost Computer Modern) fonts. Autologic has been vague as to when they'll get their act together *vis à vis* the new CM fonts.

American Mathematical Society, P O Box 6248, Providence, RI 02940; (401) 272-9500

The AMS is happy to accept your DVI files on IBM PC or Macintosh diskette (although no PostScript extensions can be handled). Your output is produced for you by an Alphatype CRS, with a resolution of 5333 dpi. The turnaround is anywhere from one week to a month, with the average being two weeks. The AMS will be using the AM fonts for the next few months, but plans to change over to CM as soon as possible. The AMS is also looking to acquire a new typesetter in the near future, with access to the new machine's full font library.