TEX Live CD-ROM

The TEX Live Guide, version 2

Sebastian Rahtz and Michel Goossens

Contents

1 Introduction 81
1.1 History and acknowledgements 81
1.2 Future versions 82

2 Structure and contents of the CD-ROM 82
2.1 The TDS tree 82

3 Installation and use under Unix 83
3.1 Running **TEX Live** from the CD-ROM 83
3.2 Installing **TEX Live** to a hard disk 84
3.3 Installing individual packages from **TEX Live** to a hard disk 84
3.4 `texconfig` 86
3.5 Building on a new platform 86

4 A user's guide to the Web2c system 86
4.1 `Kpathsea` path searching 87
4.2 Filename databases 89
4.3 Runtime options 93

5 Other packages on the CD-ROM 93
5.1 OzTEX 93
5.2 CMacTeX 94
5.3 MiKTeX 94
5.4 emTeX 94

A The `texmf.cnf` file 95

B Catalogue of Packages 101

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1 Introduction

This documentation describes the main features of the **TEX Live** CD-ROM, a TEX/LATEX distribution for Unix, Windows32, Amiga and NeXT systems, that includes TEX, LATEX 2ε, METAFONT, MetaPost, many other programs such as Makeindex, dvips, xdvi and BIBTEX; and a very complete set of macros, fonts and documentation conforming to the *TEX Directory Standard* which can be used with nearly every TEX setup.

This TEX package uses the Web2c implementation of the programs, which tries to make TEXing as easy as possible, and takes full advantage of the efficient and highly customizable Kpathsea library from Karl Berry. It can be run either directly from the CD-ROM, or installed on a hard disk.

The **TEX Live** runnable systems contain two experimental extensions to normal TEX:

1. ε-TEX, which adds a small but powerful set of new primitives, and the TEX--XET extensions for left to right typesetting; in default mode, ε-TEX is 100% compatible with ordinary TEX. See `share/texmf/doc/html/e-tex/etex.htm` on the CD-ROM for details.
2. pdfTEX, which can optionally write Acrobat PDF format instead of `dvi`; there is no formal documentation for this yet, but the file `share/texmf/tex/pdftex/example.tex` shows how it is used. The LATEX `hyperref` package has an option 'pdftex' which turns on all the program features.

While ε-TEX is stable, pdfTEX is under continual development; the version on the CD-ROM may not be stable. Most platforms have version 0.11 of May 7th, but some have a slightly earlier one of May 5th, which may have problems including PNG files.

The entire GUTenberg distribution for Windows is included on the CD-ROM, ready to install, as are the following complete packages:

- OzTEX 3.0 for Macintosh
- CMacTeX 2.6 for Macintosh
- Macintosh utilities (Alpha, Excalibur, etc.)
- MikTeX for Windows 95
- emTeX for MSDOS and OS/2
- TEX shells for Windows and DOS (Winedt, e4t, TeXtelmExtel, emTeXgi)

These are provided unchanged from CTAN, and have not been integrated in any way with the rest of the CD-ROM.

1.1 History and acknowledgements

This CD-ROM distribution is a joint effort by the TEX Users Group, the UK TEX Users Group, and the French TEX Users (GUTenberg), with the support of the Dutch, German and Czech/Slovak user groups. Discussion began in late 1993 when the Dutch TEX Users Group was starting work on its 4AllTEX CD-ROM for MSDOS users, and it was hoped at that time to issue a single, rational, CD-ROM for all systems. This was far too ambitious a target, but it did spawn not only the very successful 4AllTEX CD-ROM, but also the TUG Technical Council working group on a *TEX Directory Structure*, which specified how to create consistent and manageable collections of TEX support files. The final draft of the TDS was published in the

December 1995 issue of *TUGboat*, and it was clear from an early stage that one desirable product would be a model structure on CD-ROM. The CD-ROM you now have is a very direct result of the working group's deliberations. It was also clear that the success of the 4AllTEX CD-ROM meant that Unix users would benefit from a similarly easy system, and this is the other main strand of **TEX Live**.

We undertook to make a new Unix-based TDS CD-ROM in the autumn of 1995, and quickly identified Thomas Esser's teTEX as the ideal setup, as it already had multi-platform support and was built with portability across file systems in mind. Thomas agreed to help, and work began seriously at the start of 1996. The first edition was released in May 1996. At the start of 1997, Karl Berry completed a major new release of his Web2c package, which included nearly all the features which Thomas Esser had added in teTEX, and we decided to base the 2nd edition of the CD-ROM on the standard Web2c, with the addition of teTEX's `texconfig` script.

We are particularly grateful to: Karl Berry for extra advice, encouragement, and (of course) for providing the Web2c distribution; Thomas Esser, without whose marvellous teTEX package this CD-ROM would certainly not exist, and whose continual help makes it a better product; and Ulrik Vieth, for checking many assumptions at the start, and providing a great deal of extra material for the documentation tree.

Fabrice Popineau did the excellent port of Web2c 7.0 to Windows 95/NT and provided much help; Andreas Scherer contributed the Amiga compilation; Gregor Hoffleit contributed the TeXview material for NextStep users, and the NextStep binaries. At Florida State University Supercomputer Research Institute, Mimi Burbank arranged access to a slew of different computers to compile TEX on, and acted as an essential guinea-pig whenever asked. Michel Goossens provided access to computers at CERN, and Robin Fairbairns stepped in to provide an Alpha running Linux at Cambridge.

Some of this documentation is drawn from the teTEX guide by Thomas Esser and Dirk Hillbrecht; the catalogue of packages depends very much on the ongoing work of Graham Williams (`mailto:Graham.Williams@cbr.dit.csiro.au`), who kindly agreed to allow us to use it here. Mimi Burbank, Robin Fairbairns and Ulrik Vieth worked hard to improve this text.

1.2 Future versions

This CD-ROM is not a perfect product! We plan to re-issue it once a year, and would like to provide more help material, more utilities, more installation programs, and (of course) an ever-improved and checked tree of macros and fonts. This work is all done by hard-pressed volunteers in their limited spare time, and a great deal remains to be done. If you can help, don't hesitate to put your name forward!

Corrections, suggestions and additions for future revisions should be sent to:

Sebastian Rahtz
7 Stratfield Road
Oxford OX2 7BG
United Kingdom
`mailto:s.rahtz@elsevier.co.uk`

Updates, notes, and suggestions will be made available on CTAN in `info/texlive`. A WWW page for information and ordering details is at `http://www.tug.org/tex-live.html`.

2 Structure and contents of the CD-ROM

The CD-ROM top level directories are:

bin The TEX family programs, arranged in separate platform directories;

info Documentation in GNU 'info' format for the TEX system;

macintosh The OzTEX and CMacTeX packages ready to install, plus some other utilities;

man Documentation in Unix man pages for the TEX system;

msdos DOS TEX packages — emTeX, and three TEX shells;

support The source of all programs, including the main Web2c TEX and METAFONT distribution; this directory also includes various bits of TEX-related software which are *not* installed by default, such as MusixTEX support programs, and a complete set of Ghostscript;

share The main support tree of macros, fonts and documentation;

wingut The GUTenberg distribution for Windows; this consists of compressed archives which must be unpacked and installed on a hard disk. Please see the detailed instructions in French;

win32 TEX packages for Windows 95 and NT users (MikTeX, and the original package of the Win32 port of Web2c).

There are also two installation scripts for Unix systems, `install-cd.sh` and `install-pkg.sh`; we discuss them on p. 83.

2.1 The TDS tree

The **TEX Live** `share/texmf` tree consists of various 'collections', each of which has a set of 'packages', of

which there are over 400 on the CD-ROM. Normal installation allows the user to copy all of a collection to a local hard disk from the CD-ROM, but it is also possible to install just one package of a collection. Each of the collections is divided into *basic* (1), *recommended* (2) and *other* (3). The collections are:

ams The American Mathematical Society macro packages and fonts

bibtex BibTeX styles and databases

doc General guides and documentation in various formats, including HTML and PDF

dvips Support for Rokicki's dvi to PostScript driver

fonts Font sources, metrics, PostScript and bitmap forms

formats Eplain, RevTeX, physxx, texsis, alatex, text1, lollipop, etc.

generic Extra macros for use with any format

graphics Macro packages for graphics

lang Support for non-English languages

latex LaTeX, including official tools and all LaTeX 2_ε contributed packages

metapost Support for MetaPost

plain Macros for plain TeX

systems Binaries for Unix platforms

texlive Basic material for the distribution

The appendix starting on p. 101 lists all the packages in alphabetical order with the collection they are found in, and a brief description. Thus all packages in collection `latex1` are what one must have to get started with LaTeX, packages in `latex2` are recommended for most users, and `latex3` contains optional packages. The directory `share/texmf/lists` contains lists of all files in each package (used by the installation package).

3 Installation and use under Unix

You can use the **TeX Live** CD-ROM in three ways:

1. You can mount the CD-ROM on your file system, adjust your `PATH`, and run everything off the CD-ROM; this takes very little disk space, and gives you immediate access to everything on the CD-ROM; although the performance will not be optimal, it is perfectly acceptable on, for instance, PCs running Linux;
2. You can install all or part of the system to your local hard disk; this is the best method for many people, if they have enough disk space to spare (a minimum of about 10 megabytes, or 100 megabytes for a recommended good-sized system);
3. You can install selected packages to work either with your existing TeX system or a **TeX Live** system you installed earlier.

Each of these methods is described in more detail in the following sections.

Warning: This CD-ROM is in ISO 9660 (High Sierra) format, with Rock Ridge extensions. In order to take full advantage of the CD-ROM on a Unix system, your system needs to be able to use the Rock Ridge extensions. Please consult the documentation for your *mount* command to see if it is possible. If you have several different machines on a local network, see if you can mount the CD-ROM on one which *does* support Rock Ridge, and use it from the others.

Linux, FreeBSD, Sun, SGI and DEC Alpha systems should be able to use the CD-ROM with no problems. We would appreciate receiving detailed advice from other system users who also succeed, for future versions of this documentation.

The discussion below about installation assumes you have been able to mount the CD-ROM with full Rock Ridge compatibility.

3.1 Running TeX Live from the CD-ROM

The organisation of Web2c means that you can run programs simply by adding the appropriate directory under `bin` on the CD-ROM to your `PATH`, and the support files will all be found with no further ado. The following table shows the list of available directories and the systems they apply to.

alpha-linux	DEC Alpha Linux
alpha-osf3.2	DEC Alpha OS 3.2
amiweb2c	Amiga
hppa11-hpux9.05	HP9000 HPUX 9.05
hppa11-hpux10.20	HP9000 HPUX 10.20
i386-linux	Intel PC with Linux (ELF)
i586-freebsd2.2	Intel PC with Free BSD
i686-linux	Intel Pentium Pro with Linux
mab-nextstep3	NextStep 3
mips-irix4.0.5	SGI IRIX 4.0.5
mips-irix5.3	SGI IRIX 5.3
mips-irix6.3	SGI IRIX 6.3
mips-ultrix4.4	DECstation Ultrix 4.4
rs6000-aix3.2.5	IBM RS 6000 AIX 3.2.5
rs6000-aix4.1.1	IBM RS 6000 AIX 4.1.1
sparc-sunos4.1.3	Sun Sparc Sunos 4.1.3
sparc-solaris2.5	Sun Sparc Solaris 2.5
sparc-solaris2.4	Sun Sparc Solaris 2.4
sparc-linux	Sun Sparc Linux
win32	Windows 95 or NT

You may worry that when you subsequently make fonts or change configuration, things will go wrong because you cannot change files on the CD-ROM. However, you can maintain a parallel, writeable, TEX tree on your hard disk; this is searched before the main tree on the CD-ROM. The default location is `/usr/local/texmf`, but you can override this by setting the `TEXMFLOCAL` environment variable.

Thus *sh* or *bash* users on an Intel PC running Linux who mount the **TEX Live** CD-ROM on `/cdrom` by issuing the command:

```
mount -t iso9660 /dev/cdrom /cdrom
```

might add the following to their `.profile` script:

```
PATH=/cdrom/bin/i386-linux:$PATH
export PATH
```

If in doubt, ask your local system support guru to help you work out how to mount your CD-ROM or which directory to use for your system.

Appropriate support files will be installed on your hard disk the first time you need them. It is a good idea to immediately run the `texconfig` script to initialize things, and check it all works.

3.2 Installing TEX Live to a hard disk

All of the necessary steps to install all or part of the distribution on your hard disk are achieved by mounting the CD-ROM, changing to the top-level directory, and typing:

```
sh install-cd.sh
```

(On some Unix systems, you may need to use `sh5` or `bsh`). This works by accessing lists of collections and packages from the CD-ROM, and trying to guess what sort of computer system you are on; it should start by displaying the following:

```
Initializing collections... Done.
Counting selected collections... Done.
Calculating disk space requirements for
                  collections...Done.
Initializing system packages... Done.
```

It will then show the main control screen (Figure 1), which lets you change four things:

1. the type of system you are on, or want to install for;
2. the collections you want to install, at *basic*, *recommended* or *other* level;
3. the location on your hard disk to put the files;
4. some runtime behaviour features.

You choose options by typing a letter or number and pressing return. In the example, a Linux ELF system has been detected, the default of all collections to recommended level has been chosen, and the default installation directory is `/usr/local`; note that the disk space required for the current installation configuration is also displayed. If you make a suggested setup, you need about 172 megabytes of disk free; however, the basic setup will only take about 10 megabytes, and you can enhance it with selected packages as you need them.

Under the directory you choose for installation, the installation script will put the binaries in a subdirectory of `bin`, and the support tree in `share/texmf`.

The `options` item lets you decide whether to make new fonts be created in another location (if you want the main package mounted read-only for most users), and whether to make symbolic links for the *man* and GNU *info* pages in the 'standard' locations.

When you choose `<C>` for collections, you will see the display of available collections, the level of installation selected, and the disk space required (Figure 2). You can set alternative levels of installation for each collection, ranging from *none* to *all*. You can either set this for all collections at once, or choose a particular collection and set its level (Figure 3).

When you are finished, return to the main screen, and ask the installation to start. It will take each of the collections and systems that you requested, consult the list of files on the CD-ROM, and build a master list of files to transfer. These will then be copied to your hard disk, and the initialization sequence run (creating format files etc.). When this has finished, all you need do is add the correct subdirectory of `bin` in the TEX installation to your path, and start using TEX. If you want to move the binaries up one level, e.g. from `/usr/local/bin/alpha-osf3.2` to `/usr/local/bin`, you need to edit `share/texmf/web2c/texmf.cnf` and change the line

```
prefix = $SELFAUTOPARENT
```

to

```
prefix = $SELFAUTODIR
```

You can of course change the value of `prefix` to any directory you like, and move the support directory there.

3.3 Installing individual packages from TEX Live to a hard disk

You may want to use the **TEX Live** CD-ROM to either update an existing setup, or add features to an earlier installation from the CD-ROM. The main installation program is intended for the first time only, and subsequently you should use the

```
==================> TeX Live installation procedure <==========
===> Note: Letters/digits in brackets indicate menu items <===
===>       for commands or configurable options           <===
    Detected system: Intel PC with Linux (ELF)
    <C> collections:    21 out of 30, disk space required: 163955 kB
    <S> systems:         1 out of 20, disk space required:   7946 kB
                               total disk space required: 171901 kB
    <D> directories:
          TEXDIR = /usr/local
    <O> options:
          [ ] alternate directory for automatically generated fonts
          [ ] create symlinks in standard directories
    Other commands:
          <I> start installation,  <H> help,  <Q> quit
Enter command:
```

Figure 1: Installation screen, example 1

```
Current collections setup:           total size : 171901 kB
============================================================
        name      selection         size
  <1>   ams       [recommended]     6359 kB
  <2>   bibtex    [recommended]     6584 kB
  <3>   doc       [recommended]    26531 kB
  <4>   dvips     [recommended]      563 kB
  <5>   fonts     [recommended]    21862 kB
  <6>   formats   [recommended]     1003 kB
  <7>   generic   [recommended]      501 kB
  <8>   graphics  [recommended]    10373 kB
  <9>   lang      [recommended]     3287 kB
  <W>   metapost  [recommended]     1280 kB
  <X>   latex     [recommended]    28333 kB
  <Y>   plain     [recommended]      756 kB
  <Z>   texlive   [recommended]    56523 kB
                           SUM:   163955 kB
================================================
  global commands: select <n>one / <b>asic / r<e>commended / <a>ll
                   for all collections
  <R>   return to platform menu
  <Q>   quit
Enter command to modify current selection:
```

Figure 2: Installation screen, example 2

```
Collection: Fonts
================================================================================
Fonts, including metrics, virtual fonts and sources
================================================================================
  <N>  no packages
  <B>  basic packages                 [  2007 kB]
  <E>  basic + recommended packages   [ 21862 kB]
  <A>  all packages                   [ 34303 kB]
================================================================================
  <R>   return to collection menu
  <Q>   quit
Enter command:
```

Figure 3: Installation screen, example 3

`install-pkg.sh` script on the CD-ROM. Run this by mounting the CD-ROM, changing to the mounted directory, and typing

`sh install-pkg.sh` *options*

The script supports nine options; the first four let you set the individual package you want to install, the whole collection (i.e., `ams2`), the name of the mounted CD-ROM directory, and the name of the directory containing the list files (normally these latter two will be set automatically):

`--package=`*name*
`--collection=`*name*
`--cddir=`*name*
`--listdir=`*name*

What actually happens is controlled by four more switches; the first two allow you to exclude documentation or source files from the installation; the third stops the default action of running `MakeTeXls-R` on completion to rebuild the file database, and the last does nothing but list the files that would be installed:

`--nodoc`
`--nosrc`
`--nohash`
`--listonly`

Finally, you can specify that instead of installing the files, the script should make a *tar* archive in a specified location:

`--archive=`*name*

Thus, if we simply wanted to see the files that make up the package `fancyhdr` before we installed, our command and output would be as follows:

```
sh install-pkg.sh --package=fancyhdr --listonly
texmf/doc/latex/fancyhdr/fancyhdr.dvi
texmf/doc/latex/fancyhdr/fancyhdr.tex
texmf/lists/latex3/fancyhdr
texmf/source/latex/fancyhdr/README
texmf/source/latex/fancyhdr/fancyheadings.new
texmf/tex/latex/fancyhdr/extramarks.sty
texmf/tex/latex/fancyhdr/fancyhdr.sty
texmf/tex/latex/fancyhdr/fixmarks.sty
```

Other examples of usage are:

- Install the LaTeX package `arseneau`:

  ```
  install-pkg.sh --package=arseneau
  ```

- Install the LaTeX package `alg` with no source files and no documentation:

  ```
  install-pkg.sh \
       --package=alg --nosrc --nodoc
  ```

- Install all the packages available in the 'extra' Plain TeX collection:

  ```
  install-pkg.sh --collection=plain3
  ```

- Place all files which are need for PSTricks in a tar file in `/tmp`:

  ```
  install-pkg.sh --package=pstricks \
         --archive=/tmp/pstricks.tar
  ```

3.4 `texconfig`

After the installation program has copied all files to their final locations, you can call a program called `texconfig` that allows you to configure the system to fit your local needs. This can be called at any other time to change your setup, with a full-screen (which requires the `dialog` program) or command-line interface. It should be used for all maintenance, like changes of installed printers, or rebuilding of the file database. Both modes have help text to guide you through the facilities.

3.5 Building on a new platform

If you have a platform for which we have not provided binary sources, you will need to compile TeX and friends from scratch. This is not as hard as it sounds. What you need is all in the directory `support/texk-7.0` on the CD-ROM.

To compile TeX, you should get gcc, flex and a recent version of GNU make. gcc-2.5.8, flex-2.4.7 and GNU make-3.72.1 or newer should be fine. You may be able to work with other C compilers and Make programs, but you will need a good understanding of building Unix programs to sort out problems.

You should first install the support tree from the **TeX Live** CD-ROM (do a basic install, with no system binaries chosen). Then copy the `texk-7.0` directory to your disk, and run

```
configure -prefix=$TEXMF
```

where `$TEXMF` is the place where you installed **TeX Live**.

Now type `make install-exec` and relax...

4 A user's guide to the Web2c system

Web2c contains a set of TeX-related programs, i.e., TeX itself, METAFONT, MetaPost, BibTeX, etc. The original implementation was by Tomas Rokicki, who in 1987 developed a first TeX-to-C system adapting change files under Unix, which were primarily the work of Howard Trickey and Pavel Curtis. Tim Morgan became the maintainer of the system, and during this period the name changed to Web-to-C. In 1990, Karl Berry took over the work, assisted by dozens of additional contributors. The latest result is Web2c Version 7, which was released in February 1997, and forms the basis of the present **TeX Live** CD-ROM.

The Web2c 7.0 system runs on Unix, Windows 95/NT, DOS, Amiga, and other operating systems. It uses Knuth's original sources for TeX and other

basic programs written in `web` and translates them into C source code. Moreover, the system offers a large set of macros and functions developed to augment the original TEX software. The most commonly used components are:

`bibtex` Maintaining bibliographies.
`dmp troff` to MPX (MetaPost pictures).
`dvicopy` Virtual font expansion.
`dvitomp` DVI to MPX (MetaPost pictures).
`dvitype` DVI to human-readable text.
`gftodvi` Generic font proofsheets.
`gftopk` Generic to packed fonts.
`gftype` GF to human-readable text.
`makempx` MetaPost label typesetting.
`mf` Creating typeface families.
`mft` Prettyprinting METAFONT source.
`mpost` Creating technical diagrams.
`mpto` MetaPost label extraction.
`newer` Compare modification times.
`patgen` Creating hyphenation patterns.
`pktogf` Packed to generic fonts.
`pktype` PK to human-readable text.
`pltotf` Property list to TFM.
`pooltype` Display WEB pool files.
`tangle` WEB to Pascal.
`tex` Typesetting.
`tftopl` TFM to property list.
`vftovp` Virtual font to virtual property list
`vptovf` Virtual property list to virtual font.
`weave` WEB to TEX.

The precise functions and syntax of these programs are described in the documentation of the individual packages or of Web2c itself. However, knowing a few principles governing the whole family of programs will help you to benefit optimally from your Web2c installation.

All programs honor the standard GNU options:

`-help` print basic usage summary.
`-verbose` print detailed progress report.
`-version` print version information, then exit.

For locating files the Web2c programs use the path searching library Kpathsea. This library uses a combination of environment variables and a few configuration files to optimize searching the TEX directory tree. Web2c 7.0 can handle more than one directory tree simultaneously, which is useful if one wants to maintain TEX's standard distribution and local extensions in two distinct trees. To speed up file searches the root of each tree has a file `ls-R`, containing an entry showing the name and relative pathname for all files "hanging" under that root.

4.1 `Kpathsea` path searching

Let us first describe the generic path searching mechanism of the Kpathsea library.

We call a *search path* a colon- or semicolon-separated list of *path elements*, which are basically directory names. A search path can come from (a combination of) many sources. To look up a file "`my_file`" along a path "`.:/dir`", Kpathsea checks each element of the path in turn: first `./my_file`, then `/dir/my_file`, returning the first match (or possibly all matches).

In order to adapt optimally to all operating systems' conventions, on non-Unix systems Kpathsea can use filename separators different from "colon" (":") and "slash" ("/").

To check a particular path element p, Kpathsea first checks if a prebuilt database (see "Filename database" on p. 89) applies to p, i.e., if the database is in a directory that is a prefix of p. If so, the path specification is matched against the contents of the database.

If the database does not exist, or does not apply to this path element, or contains no matches, the filesystem is searched (if this was not forbidden by a specification starting with "`!!`" and if the file being searched for must exist). Kpathsea constructs the list of directories that correspond to this path element, and then checks in each for the file being searched for.

The "file must exist" condition comes into play with VF files and input files read by TEX's `\openin` command. Such files may not exist (e.g., `cmr10.vf`), and so it would be wrong to search the disk for them. Therefore, if you fail to update `ls-R` when you install a new VF file, it will never be found.

Each path element is checked in turn: first the database, then the disk. If a match is found, the search stops and the result is returned.

Although the simplest and most common path element is a directory name, Kpathsea supports additional features in search paths: layered default values, environment variable names, config file values, users' home directories, and recursive subdirectory searching. Thus, we say that Kpathsea *expands* a path element, meaning transforming all the specifications into basic directory name or names. This is described in the following sections in the same order as it takes place.

Note that if the filename being searched for is absolute or explicitly relative, i.e., starts with "/" or "./" or "../", Kpathsea simply checks if that file exists.

4.1.1 Path sources

A search path can come from many sources. In the order in which Kpathsea uses them:

1. A user-set environment variable, for instance, `TEXINPUTS`. Environment variables with a period and a program name appended override; e.g., if "`latex`" is the name of the program being run, then `TEXINPUTS.latex` will override `TEXINPUTS`.
2. A program-specific configuration file, for example, a line "`S /a:/b`" in `dvips`' `config.ps`.
3. A Kpathsea configuration file `texmf.cnf`, containing a line like "`TEXINPUTS=/c:/d`" (see below).
4. The compile-time default.

You can see each of these values for a given search path by using the debugging options (see "Debugging actions" on p. 92).

4.1.2 Config files

Kpathsea reads *runtime configuration files* named `texmf.cnf` for search path and other definitions. The search path used to look for these files is named `TEXMFCNF` (by default such a file lives in the `share/texmf/web2c` subdirectory). *All* `texmf.cnf` files in the search path will be read and definitions in earlier files override those in later files. Thus, with a search path of "`.:$TEXMF`", values from `./texmf.cnf` override those from `$TEXMF/texmf.cnf`.

While reading the description of the format of the file `texmf.cnf` below, please also refer to p. 95, which lists the `texmf.cnf` file on the CD-ROM.

- Comments start with "`%`" and continue to the end of the line.
- Blank lines are ignored.
- A \ at the end of a line acts as a continuation character, i.e., the next line is appended. Whitespace at the beginning of continuation lines is not ignored.
- Each remaining line must look like

  variable`[.`*progname*`] [=]` *value*

  where the "`=`" and surrounding whitespace is optional.
- The *variable* name may contain any character other than whitespace, "`=`", or "`.`", but sticking to "`A-Za-z_`" is safest.
- If "`.`*progname*" is present, the definition only applies if the program that is running is named *progname* or *progname*`.exe`. This allows different flavors of TEX to have different search paths, for example.
- *value* may contain any characters except "`%`" and "`@`". The "`$`*var*`.`*prog*" feature is not available on the right-hand side; instead, you must use an additional variable (see the definition of the variable `latex2e_inputs` for example). A "`;`" in *value* is translated to "`:`" if running under Unix; this is useful to write a single `texmf.cnf` which can be used under both Unix and NT.
- All definitions are read before anything is expanded, so you can use variables before they are defined.

A configuration file fragment illustrating most of these points is shown below:

```
% TeX input files -- i.e.,
% anything found by \input or \openin ...
latex209_inputs = \
  .:$TEXMF/tex/latex209//:$TEXMF/tex//
latex2e_inputs  = \
  .:$TEXMF/tex/latex//:$TEXMF/tex//
TEXINPUTS = .:$TEXMF/tex//
TEXINPUTS.latex209 = $latex209_inputs
TEXINPUTS.latex2e = $latex2e_inputs
TEXINPUTS.latex = $latex2e_inputs
```

4.1.3 Path expansion

Kpathsea recognizes certain special characters and constructions in search paths, similar to that in Unix shells. As an general example, the following complex path: `~$USER/{foo,bar}//baz` expands to all subdirectories under directories `foo` and `bar` in `$USER`'s home directory that contain a directory or file `baz`. These expansions are explained in the sections below.

4.1.4 Default expansion

If the highest-priority search path (see "Path sources" on p. 88) contains an *extra colon* (i.e., leading, trailing, or doubled), Kpathsea inserts at that point the next-highest-priority search path that is defined. If that inserted path has an extra colon, the same happens with the next-highest. For example, given an environment variable setting

```
setenv TEXINPUTS /home/karl:
```

and a `TEXINPUTS` value from `texmf.cnf` of

```
.:$TEXMF//tex
```

then the final value used for searching will be:

```
/home/karl:.:$TEXMF//tex
```

Since it would be useless to insert the default value in more than one place, Kpathsea changes only one extra "`:`" and leaves any others in place: it checks first for a leading "`:`", then a trailing "`:`", then a doubled "`:`".

4.1.5 Brace expansion

A useful feature is brace expansion, which means that, for instance, `v{a,b}w` expands to `vaw:vbw`. Nesting is allowed. This can be used to implement multiple TEX hierarchies, by assigning a brace list to `$TEXMF`.

For example, in `texmf.cnf`, you find the following definition:

```
texdir = $TEXMFLOCAL/tex,!!$TEXMFMAIN/tex
```

Then you can write something like:

```
TEXINPUTS = .;$texdir//
```

which means that after looking in the current directory, first the full `$TEXMFLOCAL/tex` directory tree (on disk) and then the `!!$TEXMFMAIN/tex` tree (using the data base file `ls-R` *only*) will be searched. It is a convenient way for running two parallel TEX structures, one "frozen" (like on a CD-ROM) and the other being continuously updated with new versions as they become available. By using the `$texdir` variable in all definitions, one is sure to always search the up-to-date tree first.

4.1.6 Subdirectory expansion

Two or more consecutive slashes in a path element following a directory *d* is replaced by all subdirectories of *d*: first those subdirectories directly under *d*, then the subsubdirectories under those, and so on. At each level, the order in which the directories are searched is *unspecified*.

If you specify any filename components after the "`//`", only subdirectories with matching components are included. For example, "`/a//b`" expands into directories `/a/1/b`, `/a/2/b`, `/a/1/1/b`, and so on, but not `/a/b/c` or `/a/1`.

Multiple "`//`" constructs in a path are possible, but "`//`" at the beginning of a path is ignored.

4.1.7 List of special characters and their meaning: a summary

The following list summarises the meaning of special characters in Kpathsea configuration files.

: Separator in path specification; at the beginning or the end of a path it substitutes the "default" path expansion.

; Separator on non-Unix systems (acts like :).

$ Variable expansion.

~ Represents the user's home directory.

`{...}` Brace expansion, e.g., `a{1,2}b` will become `a1b:a2b`.

// Subdirectory expansion. It can occur in the middle or at the end of a path (not at the beginning).

% Start of comment.

\ Continuation character (allows multi-line entries).

!! Search *only* database to locate file, *do not* search the disk.

4.2 Filename databases

Kpathsea goes to some lengths to minimize disk accesses for searches. Nevertheless, at installations with enough directories, searching each possible directory for a given file can take an excessively long time (this is especially true if many hundreds of font directories have to be traversed.) Therefore, Kpathsea can use an externally-built "database" file named `ls-R` that maps files to directories, thus avoiding the need to exhaustively search the disk.

A second database file `aliases` allows you to give additional names to the files listed in `ls-R`. This can be helpful to adapt to "8.3" filename conventions in source files.

4.2.1 `ls-R` filename database

As explained above, the name of the main filename database must be `ls-R`. You can put one at the root of each TEX installation hierarchy you wish to search (`$TEXMF` by default); most sites have only one hierarchy. Kpathsea looks for `ls-R` files along the `TEXMFDBS` path.

The recommended way to create and maintain "`ls-R`" is to run the `MakeTeXls-R` script coming with the distribution. It is invoked by the various "`MakeTeX...`" scripts. In principle, this script just runs the command

```
cd /your/texmf/root && ls -LAR ./ >ls-R
```

presuming your system's `ls` produces the right output format (GNU's `ls` is all right). To ensure that the database is always up to date, it is easiest to rebuild it regularly via `cron`, so that for changes in the installed files — perhaps after installing or updating a LATEX package — the file `ls-R` is automatically updated.

If a file is not found in the database, by default Kpathsea goes ahead and searches the disk. If a particular path element begins with "`!!`", however, *only* the database will be searched for that element, never the disk.

4.2.2 `kpsewhich`: Standalone path searching

The `kpsewhich` program exercises path searching independent of any particular application. This can be useful as a sort of `find` program to locate files in TEX hierarchies (this is used heavily in the distributed "`MakeTeX...`" scripts).

`kpsewhich` *option...* *filename...*

Options can start with either "-" or "--", and any unambiguous abbreviation is accepted.

Kpathsea looks up each non-option argument on the command line as a filename, and returns the first file found. There is no option to return all the files with a particular name (you can run the Unix "`find`" utility for that).

The more important options are described next.

`-dpi=`*num* Set the resolution to *num*; this only affects "`gf`" and "`pk`" lookups. "`-D`" is a synonym, for compatibility with `dvips`. Default is 600.

`-format=`*name*
Set the format for lookup to *name*. By default, the format is guessed from the filename. In fact, the recognized filename extensions and the allowable *name*s (including any leading ".") are the same.

You can also specify an integer for *name*; this is the only way to specify formats that don't have an associated suffix, such as MetaPost support files and `dvips` configuration files. It's also somewhat faster, since no unused formats need to be initialized. The integers appear in the output of "`-help`". Currently recognized file type numbers, with their description, possible file extensions, and the corresponding environment variables (between parentheses[1]) as follows:

0 Generic font files
.gf (GFFONTS, GLYPHFONTS, TEXFONTS)
1 packed font files
.pk (PKFONTS, TEXPKS, GLYPHFONTS, TEXFONTS)
2 TEX bitmap font
(GLYPHFONTS)
3 Adobe PostScript font metrics
.afm (AFMFONTS)
4 METAFONT memory dump
.base (MFBASES, TEXMFINI)
5 BIBTEX bibliography database
.bib (BIBINPUTS, TEXBIB)
6 BIBTEX styles
.bst (BSTINPUTS)
7 Runtime configuration files
.cnf (TEXMFCNF)
8 Web2c filename database
ls-R (TEXMFDBS)
9 TEX memory dump
.fmt (TEXFORMATS, TEXMFINI)
10 TEX generic font maps
.map (TEXFONTMAPS)
11 MetaPost memory dump
.mem (MPMEMS, TEXMFINI)
12 METAFONT source files
.mf (MFINPUTS)
13 METAFONT program strings
.pool (MFPOOL, TEXMFINI)
14 METAFONT prettyprinter style files
.mft (MFTINPUTS)
15 MetaPost sources
.mp (MPINPUTS)
16 MetaPost program strings
.pool (MPPOOL, TEXMFINI)
17 MetaPost support files
(MPSUPPORT)
18 Ω compiled process
.ocp (OCPINPUTS)
19 Ω font metrics
.ofm (OFMFONTS, TEXFONTS)
20 Ω property list
.opl (OPLFONTS, TEXFONTS)
21 Ω tranlation process files
.otp (OTPINPUTS)
22 Ω virtual fonts
.ovf (OVFFONTS, TEXFONTS)
23 Ω virtual property lists
.ovp (OVPFONTS, TEXFONTS)
24 graphics/figure
.eps .epsi (TEXPICTS, TEXINPUTS)
25 Source input files read by TEX
.tex .ltx .dtx .texi .texinfo .txi .cls .sty .eps .epsi (TEXINPUTS)
26 TEX documentation
.ps .pdf .doc .txt (TEXDOCS)
27 TEX program strings
.pool (TEXPOOL, TEXMFINI)
28 TEX system package sources
.dtx .ins (TEXSOURCES)
29 PostScript header/font
.pro (TEXPSHEADERS, PSHEADERS)
30 Troff fonts
(TRFONTS)
31 TEX font metric files
.tfm (TFMFONTS, TEXFONTS)
32 PostScript type1 fonts
.pfa .pfb (T1FONTS, T1INPUTS, TEXPSHEADERS, PSHEADERS)
33 virtual fonts
.vf (VFFONTS, TEXFONTS)
34 dvips configuration files
config.*xxx*, *xxx*.map (TEXCONFIG)
35 MakeIndex style files
.ist (TEXIDXSTYLE, INDEXSTYLE)

These environment variables are set by default in the configuration file `texmf.cnf`. It is only when you want to override one or more of the values specified in that file that you might want to set them explicitly in your execution environment.

Note that the "`-format`" and "`-path`" options are mutually exclusive.

[1] You can find definitions for these environment variables in the file `texmf.cnf` (p. 95)

`-mode=`*`string`*
: Set the mode name to *string*; this also only affects "`gf`" and "`pk`" lookups. No default: any mode will be found.

`-must-exist`
: Do everything possible to find the files, notably including searching the disk. By default, only the `ls-R` database is checked, in the interest of efficiency.

`-path=`*`string`*
: Search along the path *string* (colon-separated as usual), instead of guessing the search path from the filename. "`//`" and all the usual expansions are supported. The options "`-path`" and "`-format`" are mutually exclusive.

`-progname=`*`name`*
: Set the program name to *name*. This can affect the search paths via the "*`.progname`*" feature in configuration files. The default is "`kpsewhich`".

`-show-path=`*`name`*
: shows the path used for file lookups of file type *name*. Either a filename extension ("`.pk`", "`.vf`", etc.) or an integer can be used, just as with "`-format`" option.

`-debug=`*`num`*
: sets the debugging options to *num*.

4.2.3 Examples of use

Let us now have a look at Kpathsea in action.

```
>> kpsewhich -format=.tex article.cls
/usr/local/share/texmf/tex/latex/base/article.cls
```

We are looking for the file `article.cls` in the TEX source file directories (type `.tex`, format type 25). We find it in the subdirectory `tex/latex/base` below the "`TEXMF`" root directory. To save space, in the following examples we will denote with ... the repetitive part `/usr/local/share/texmf` preceding each file path.

```
>> kpsewhich tugboat.bib
.../bibtex/bib/beebe/tugboat.bib
```

BIBTEX bibliography databases correspond to format type `.bib`. Here we located file `tugboat.bib`.

```
>> kpsewhich cmr10.pk
.../fonts/pk/ljfour/public/cm/cmr10.600pk

>> kpsewhich -dpi=300 cmr10.pk

>> kpsewhich ptmb8r.pk
.../fonts/pk/modeless/dpi597/ptmb8r.pk

>> kpsewhich -dpi=300 ptmb8r.pk
.../fonts/pk/modeless/dpi300/ptmb8r.pk
```

Font bitmap glyph files of type `.pk` correspond to format type 2. They are used by visualization programs like `dvips` and `xdvi`. On our system we found the Computer Modern file `cmr10` for the mode `ljfour`, at a base resolution of 600 dpi (dots per inch). However, when specifying that we are only interested in a resolution of 300dpi (`-dpi=300`) we are told there is no such font available on the system. In fact, a program like `dvips` or `xdvi` would go off and actually build the `.pk` files at the required resolution using the script `MakeTeXPK`. The last two commands look for a file `ptmb8r.pk`. When specifying no explicit resolution the system returns one (at 597 dpi) which is closest to the "default" set in the `MakeTeXPK` script (600 dpi). However, when specifying the desired resolution (300 dpi) the full path name of the relevant target file is shown.

Next we turn our attention to `dvips`'s header (format type 29) and configuration files (format type 34).

```
>> kpsewhich tex.pro
.../dvips/base/tex.pro

>> kpsewhich -format=34  psfonts.map
.../dvips/base/psfonts.map

>> kpsewhich -format=.map config.ps
.../dvips/config/config.ps
```

We first look at a few of the commonly used files, namely the general prolog `tex.pro` for TEX support, before turning our attention to the generic configuration file (`config.ps`) and the PostScript font map `psfonts.map`. Note how we fool the system by asking for `config.ps` as if it had a suffix of `.map`.

We now look a little closer at the URW Times PostScript support files. The name for these in Berry's font naming scheme is "`utm`". The first file we look at is the configuration file, which contains the name of the map file.

```
>> kpsewhich -format=34  config.utm
.../dvips/config/config.utm
```

The contents of that file is

```
p +utm.map
```

which points to the file `utm.map`, which we want to locate next.

```
>> kpsewhich utm.map
.../dvips/urw/utm.map
```

In this map file, which resides in `dvips`'s `urw` subdirectory, the file names of the Type1 PostScript

fonts referenced are defined. The contents looks like (we only show part of the lines):

```
utmb8r NimbusRomNo9L-Medi      ... <utmb8a.pfb
utmbi8r NimbusRomNo9L-MediItal... <utmbi8a.pfb
utmr8r NimbusRomNo9L-Regu      ... <utmr8a.pfb
utmri8r NimbusRomNo9L-ReguItal... <utmri8a.pfb
utmbo8r NimbusRomNo9L-Medi "   ... <utmb8a.pfb
utmro8r NimbusRomNo9L-Regu "   ... <utmr8a.pfb
```

Let's, for instance take the Times Regular instance `utmr8a.pfb`, and find its position in the `texmf` directory tree by using a search with format type 32.

```
>> kpsewhich utmr8a.pfb
.../fonts/type1/urw/utm/utmr8a.pfb
```

It should be evident from these few examples how one can easily locate the whereabouts of a given file. This is especially important if you suspect that the wrong version of a file is picked up somehow, since `kpsewhich` will show you the first file encountered.

4.2.4 Debugging actions

Sometimes it is necessary to really investigate how a program resolves file references. To make this feasible in a convenient way Kpathsea offers various debug levels:

1 `stat` calls (file tests). When running with an up-to-date `ls-R` database this should almost give no output.

2 References to hash tables (like `ls-R` database, map files, configuration files).

4 File open and close operations.

8 General path information for file types searched by Kpathsea. This is useful to find out where a particular path for the file was defined.

16 Directory list for each path element (only relevant for searches on disk).

32 File searches.

A value of `-1` will set all the above options; in practice you will probably always use these levels if you need any debugging.

Similarly, with the `dvips` program one can, by setting some debug switches, follow in detail where files are picked up from. Alternatively, when a file is not found, the debug trace shows in which directories the program looks for the given file, so that one can get an indication what the problem is.

Generally speaking, as most programs call the Kpathsea library internally, you can select a debug option by using the `KPATHSEA_DEBUG` environment variable, and setting it to (a combination of) values as described in the above list.

Let us consider, as an example, a small LaTeX source file, `hello_world.tex`, which contains the following input.

```
\documentclass{article}
\begin{document}
Hello World!
\end{document}
```

This little file only used the font `cmr10`, so let us look how `dvips` prepares the PostScript file.

```
>> dvips -d4100 hello_world -o
```

In this case we have combined `dvips`'s debug class 4 (font paths) with Kpathsea's path element expansion (see `dvips` Reference Manual). We get something like shown below (we have rearranged the output for easier display).

```
debug:start search(file=texmf.cnf, must_exist=1,
                   find_all=1,
  path=.:/usr/local/bin/texlive:/usr/local/bin:
       /usr/local/bin/share/texmf/web2c:/usr/local:
       /usr/local/share/texmf/web2c:
       /.:/./teTeX/TeX/share/texmf/web2c:).
kdebug:start search(file=ls-R, must_exist=1,
                   find_all=1,
  path=/usr/local/texmf:/usr/local/share/texmf).
kdebug:search(ls-R) =>/usr/local/share/texmf/ls-R
kdebug:start search(file=aliases, must_exist=1,
                   find_all=1,
  path=/usr/local/texmf:/usr/local/share/texmf).
kdebug:search(aliases) =>
kdebug:start search(file=config.ps, must_exist=0,
                   find_all=0,
  path=.:/usr/local/texmf/dvips//:
       !!/usr/local/share/texmf/dvips//).
kdebug:search(config.ps) =>
  /usr/local/share/texmf/dvips/config/config.ps
kdebug:start search(file=/root/.dvipsrc,
                   must_exist=0, find_all=0,
  path=.:/usr/local/texmf/dvips//:
       !!/usr/local/share/texmf/dvips//).
kdebug:search($HOME/.dvipsrc) =>
   ...
kdebug:start search(file=psfonts.map, must_exist=0,
                   find_all=0,
  path=.:/usr/local/texmf/dvips//:
       !!/usr/local/share/texmf/dvips//).
kdebug:search(psfonts.map) =>
  /usr/local/share/texmf/dvips/base/psfonts.map
```

First `dvips` locates its working files. It first found `texmf.cnf` (with the definitions of the paths of the other files), then the file data base `ls-R` (to optimize file searching). It goes on to find the generic configuration file `config.ps`, and then looks for the customization file `.dvipsrc` (which, in this case is *not found*). Finally `dvips` locates the generic map file for PostScript fonts `psfonts.map` (defining the relation between the internal and external names for the PostScript fonts).

At this point `dvips` identifies itself to the user:

```
dvipsk 5.66a Copyright 1986-97 Radical Eye Software
                               (www.radicaleye.com)
```

then goes on to look for the prolog file `texc.pro`,

```
kdebug:start search(file=texc.pro, must_exist=0,
                    find_all=0,
  path=.:/usr/local/texmf/dvips//:
       !!/usr/local/share/texmf/dvips//:
       /usr/local/texmf/fonts//type1//:
       !!/usr/local/share/texmf/fonts//type1//).
kdebug:search(texc.pro) =>
  /usr/local/share/texmf/dvips/base/texc.pro
```

After having found the file, `dvips` outputs date and time, and informs us that it will generate the file `hello_world.ps`, then that it needs the font file `cmr10`, and that the latter is declared as "resident"

```
' TeX output 1997.05.01:1316' -> hello_world.ps
Defining font () cmr10 at 10.0pt
Font cmr10 <CMR10> is resident.
```

Now the search is on for the file `cmr10.tfm`, which is found, then a few more prolog files (not shown), and finally for the Type1 instance `cmr10.pfb` of the font (which is found) and included in the output file (see last line).

```
kdebug:start search(file=cmr10.tfm, must_exist=1,
                    find_all=0,
  path=.:/usr/local/texmf/fonts/tfm//:
       !!/usr/local/share/texmf/fonts/tfm//:
       /var/tex/fonts/tfm//).
kdebug:search(cmr10.tfm) =>
/usr/local/share/texmf/fonts/tfm/public/cm/cmr10.tfm
kdebug:start search(file=texps.pro, must_exist=0,
                    find_all=0,
   ...
<texps.pro>.

kdebug:start search(file=cmr10.pfb, must_exist=0,
                    find_all=0,
  path=.:/usr/local/texmf/dvips//:
       !!/usr/local/share/texmf/dvips//:
       /usr/local/texmf/fonts//type1//:
       !!/usr/local/share/texmf/fonts//type1//).
kdebug:search(cmr10.pfb) =>
/usr/local/share/texmf/fonts/type1/public/cm/cmr10.pfb
<cmr10.pfb>[1]
```

4.3 Runtime options

Another of the nice features of Web2c 7.0 is its possibility to control a number of memory parameters (in particular, array sizes) via the runtime file `texmf.cnf` read by Kpathsea. A detailed list of all set-table parameters can be found in that file (see p. 95, Part 3 starting at line 261). The most interesting values are:

`main_memory` Total words of memory available, for TEX, METAFONT, and MetaPost. You must make a new format file for each different setting. For instance, you could generate a "huge" version of TEX, and call the format file `hugetex.fmt`. Using the standard way of specifying the program name used by Kpathsea the particular value of the `main_memory` variable will then be read from `texmf.cnf` (See p. 95, line 280 for the generic value and line 281 for the "huge" one instantiated by `hugetex`).

`extra_mem_bot` Extra space for "large" TEX data structures: boxes, glue, breakpoints, etc. Especially useful if you use PICTEX.

`font_mem_size` Number of words for font information available for TEX. This is more or less the total size of all TFM files read.

`hash_extra` Additional space for the hash table of control sequence names. Approximately 10,000 control sequences can be stored in the main hash table; if you have a large book with numerous cross-references, this might not be enough. On line 297 and 298 of file `texmf.cnf` as shown in p. 95 you see that both the `hugetex` and `pdftex` program invocations ask for an extra 10,000 control sequences (the default value of `hash_extra` is zero, as seen on line 296).

Of course, this facility is no substitute for truly dynamic arrays and memory allocation, but since this is extremely difficult to implement in present TEX, these runtime parameters provide a practical compromise allowing some flexibility.

5 Other packages on the CD-ROM

While the main portion of **TEX Live** (the fonts, macros and documentation) can be used on any TEX system, the set of runnable binaries is not suitable for everyone. To make the disk as widely useful as possible, we have included the original distributions of four complete TEX systems, two for Macintosh, one for Windows 95, and one for DOS and OS/2. Windows 3.1 users should look at the GUTenberg distribution on the CD-ROM.

5.1 OzTEX[2]

OzTEX is a Macintosh TEX system created by Andrew Trevorrow. The OzTEX application includes TEX, `INITEX`, a DVI previewer, a DVI-to-PostScript translator (Tom Rokicki's `dvips`) and a driver for QuickDraw printers. OzTEX also includes `dvidvi`, `dvicopy`, and Angus Duggan's PostScript utilities: `psbook`, `psnup`, `psselect` and `pstops`.

The version of `dvips` included in OzTEX supports HyperTEX and the partial downloading of PostScript fonts. It has also been enhanced for Mac users in a number of ways: Standard Mac PostScript fonts (LWFN files) can be downloaded, fully or partially. All OzTEX-specific `\special` commands are supported, such as the inclusion of

[2] This section was written by Andrew Trevorrow.

PICT/PNTG/EPSF files. The `dvips` output can be sent directly to the current printer.

OzTEX's previewer has lots of features to make it easy to proofread DVI files. It can handle PK and PostScript fonts. Anti-aliasing is supported. Virtual fonts are processed on the fly. The previewer supports most of the `\special` commands generated by LATEX's `color`, `graphics/x` and `hyperref` packages. It recognizes all `dvips`-specific `\special`s and those it cannot handle (like rotation) are silently ignored.

OzTEX includes all the most popular formats and macro packages. Plain TEX, LATEX, AMS-TEX, AMS-LATEX and REVTEX are all installed and ready to run.

OzTEX is easy to extend and customize. A default configuration file is read when OzTEX starts up; it contains a host of parameters for setting up search paths, telling TEX how much memory to allocate for various arrays, specifying which TFMs are for PostScript fonts, etc. A Config menu makes it easy to load other config files at any time. And for even more flexibility, OzTEX can automatically load a specified config file just before typesetting, previewing or printing.

5.1.1 Additional programs

The usual assortment of TEX-related programs are provided with OzTEX, including OzMF, a Mac implementation of METAFONT, and OzMP, a Mac port of John Hobby's MetaPost program for producing PostScript pictures using a METAFONT-like language.

The following programs are also distributed with OzTEX, courtesy of their authors; BibTEX by Vince Darley; MakeIndex by Rick Zaccone; Excalibur, a TEX/LATEX spelling checker, by Rick Zaccone and Robert Gottshall; and AlphaLite, a TEX/LATEX-savvy text editor, by Pete Keleher.

For the latest information about OzTEX, keep an eye on the Web page at the URL `http://www.kagi.com/authors/akt/oztex.html`.

An even better way to keep up-to-date is to join the `oztex-info` mailing list. To subscribe, send some e-mail to

```
majordomo@maths.adelaide.edu.au
```

with the following line in the *body* of the message:

```
subscribe oztex-info
```

OzTEX is distributed as shareware, so you are welcome to try it out before paying the registration fee. The individual fee is US$30 and the site fee is US$300. See the "Shareware Fee" item in OzTEX's Help menu for details on how to pay. E-mail support is provided to registered users. Send all queries and comments to Andrew Trevorrow (`akt@kagi.com`).

5.2 CMacTeX[3]

CMacTeX is an implementation of TEX for the Macintosh by Thomas Kiffe (`mailto:tkiffe@math.tamu.edu`). It includes the three main parts of any TEX installation — TEX, METAFONT and dvips. It also includes two dvi previewers, a utility for printing dvi files on a non PostScript printer, a PostScript previewer and numerous utilities for manipulating TEX fonts. Full support for the automatic generation of pk font files is an integral part of the distribution. CMacTeX can be configured to work in an integrated fashion with BBEdit, Alpha, and MPW. It will run on any Macintosh with 8 MB of RAM and System 7.

CMacTeX is shareware. The registration fee is US$35 for a single-user license and US$150 for a site license.

Installation instructions can be found in the file `/macintosh/cmactex/ReadMeFirst`

5.3 MiKTeX[4]

MiKTeX 1.07 is an implementation by Christian Schenk (`mailto:cschenk@berlin.snafu.de`) of TEX and METAFONT related utilities for Windows NT and Windows 95. The MiKTeX distribution includes TEX; LATEX 2ε Dec'96 including standard packages; METAFONT; MetaPost; dvips MakeIndex; BIBTEX; YAP (Yet Another Previewer); TeXware (dvitype etc.); METAFONTware (gftopk etc.); psutils (psselect, pstops etc.); and DVIcopy.

Installation instructions can be found in the file `/win32/miktex/README.TXT`

5.4 emTeX

The emTeX distribution for DOS and OS/2 is wriiten by Eberhard Mattes (`mailto:mattes@azu.informatik.uni-stuttgart.de`). It includes the TEX typesetter, the METAFONT font generation program, printer drivers, screen previewers, and tools like BIBTEX and MakeIndex. It also includes the macro packages LATEX 2.09 and LATEX 2ε. Fonts are included as pixel files and METAFONT source files.

Installation instructions can be found in the file `/msdos/emtex/README.ENG`

[3] This section is taken from the CMacTeX documentation.

[4] This section is drawn from the documentation.

A The texmf.cnf file

```
% original texmf.cnf -- runtime path configuration file for kpathsea.
% (If you change or delete 'original' on the previous line, the
% distribution won't install its version over yours.)
% Public domain.
%
% What follows is a super-summary of what this .cnf file can
% contain. Please read the Kpathsea manual for more information.
%
% texmf.cnf is generated from texmf.cnf.in, by replacing @var@ with the
% value of the Make variable 'var', via a sed file texmf.sed, generated
% (once) by kpathsea/Makefile (itself generated from kpathsea/Makefile.in
% by configure).
%
% Any identifier (sticking to A-Za-z_ for names is safest) can be assigned.
% The '=' (and surrounding spaces) is optional.
% No % or @ in texmf.cnf.in, for the sake of autogeneration.
% (However, %'s and @'s can be edited into texmf.cnf or put in envvar values.)
% $foo (or ${foo}) in a value expands to the envvar or cnf value of foo.
%
% Earlier entries (in the same or another file) override later ones, and
% an environment variable foo overrides any texmf.cnf definition of foo.
%
% All definitions are read before anything is expanded, so you can use
% variables before they are defined.
%
% If a variable assignment is qualified with '.PROGRAM', it is ignored
% unless the current executable (last filename component of argv[0]) is
% named PROGRAM.  This foo.PROGRAM construct is not recognized on the
% right-hand side. For environment variables, use FOO_PROGRAM.
%
% Which file formats use which paths for searches is described in the
% various programs' and the kpathsea documentation.
%
% // means to search subdirectories (recursively).
% A leading !! means to look only in the ls-R db, never on the disk.
% A leading/trailing/doubled : in the paths will be expanded into the
%   compile-time default. Probably not what you want.

%  Part 1: Search paths and directories.

% The root of everything below.
prefix = $SELFAUTOPARENT

% You can set an environment variable to override this if you're testing
% a new TeX tree, without changing anything else.
%
% You may wish to use one of the $SELFAUTO... variables here so TeX will
% find where to look dynamically.  See the manual and the definition
% below of TEXMFCNF.
%
% If you have multiple trees, you can use shell brace notation, for example:
% TEXMF = {/usr/local/mytex,/usr/local/othertex}
% and also set TEXMFDBS to /usr/local/mytex:/usr/local/othertex.
TEXMFLOCAL=/usr/local/texmf
TEXMFMAIN = $prefix/share/texmf
TEXMFLS_R = $TEXMFLOCAL
% Where to look for ls-R files.  There need not be an ls-R in the
```

```
% directories in this path, but if there is one, Kpathsea will use it.
TEXMFDBS = $TEXMFLOCAL;$TEXMFMAIN

% Where you want generated files to go. Choose one of the texmf trees
% listed in $TEXMF. The following is the default:
VARTEXMF = $TEXMFLOCAL

% The TeX inputs and fonts directories.
texdir = {$TEXMFLOCAL/tex,!!$TEXMFMAIN/tex}
omegadir ={$TEXMFLOCAL/omega,!!$TEXMFMAIN/omega}
fontdir = {$TEXMFLOCAL/fonts,!!$TEXMFMAIN/fonts}
dbmain=!!$TEXMFMAIN
%
dbtex = $texdir
dbomega = $omegadir
dbfonts = $fontdir

% TeX input files -- i.e., anything to be found by \input or \openin,
% including .sty, .eps, etc.
TEXINPUTS = .;$dbtex//

% LaTeX 2e specific macros are stored in latex.
% latex209 is not supported, at the request of the authors of LaTeX
%
latex_inputs = .;$dbtex/latex//;$dbtex/generic//
TEXINPUTS.latex = $latex_inputs
TEXINPUTS.latextex = $latex_inputs

% Omega
TEXINPUTS.lambda2e = .;$dbomega/lambda//;$latex_inputs
TEXINPUTS.lambda = .;$dbomega/lambda//;$latex_inputs

% Fontinst needs to read afm files.
TEXINPUTS.fontinst = .;$dbtex//;$dbfonts/afm//

% Plain TeX.  Have the command tex check all directories as a last
% resort, we may have plain-compatible stuff anywhere.
plain_inputs = $dbtex/plain//;$dbtex/generic//
TEXINPUTS.textex = .;$dbtex//;$plain_inputs
TEXINPUTS.tex = .;$plain_inputs;$dbtex//
TEXINPUTS.omega = .;$dbomega//;$plain_inputs;$dbtex//

% INITEX. May as well make this separate so it can search on disk;
% initex is seldom run, and might be used directly after files have been
% added, when ls-R may not up be to date.
TEXINPUTS.initex = .;$texdir//
TEXINPUTS.iniomega = .;$omegadir//;$texdir//

% Earlier entries override later ones, so put this last.
TEXINPUTS.viromega = .;$dbomega//;$dbtex//
TEXINPUTS = .;$dbtex//

% Metafont, MetaPost inputs.
MFINPUTS = .;{$TEXMFLOCAL,$dbmain}/metafont//;{$dbfonts,$VARTEXFONTS}/source//
MPINPUTS = .;{$TEXMFLOCAL,$dbmain}/metapost//

% Dump files (fmt/base/mem) for vir{tex,mf,mp} to read (see
% web2c/INSTALL), and string pools (.pool) for ini{tex,mf,mp}.  It is
% silly that we have six paths and directories here (they all resolve to
```

```
% a single place by default), but historically ...
TEXFORMATS = .;{$TEXMFLOCAL,$dbmain}/web2c
MFBASES = .;{$TEXMFLOCAL,$dbmain}/web2c
MPMEMS = .;{$TEXMFLOCAL,$dbmain}/web2c
TEXPOOL = .;{$TEXMFLOCAL,$dbmain}/web2c
MFPOOL = .;{$TEXMFLOCAL,$dbmain}/web2c
MPPOOL = .;{$TEXMFLOCAL,$dbmain}/web2c

% If you have a read-only central font directory and therefore need to
% cache MakeTeXPK-created fonts locally, set this as appropriate and
% also set the 'vartexfonts' feature in MT_FEATURES in MakeTeXnames.cnf.
VARTEXFONTS = /var/tex/fonts

% Device-independent font metric files.
VFFONTS = .;$dbfonts/vf//
TFMFONTS = .;$dbfonts/tfm//;$VARTEXFONTS/tfm//

% The $MAKETEX_MODE below means the drivers will not use a cx font when
% the mode is ricoh.  If no mode is explicitly specified, kpse_prog_init
% sets MAKETEX_MODE to /, so all subdirectories are searched.  See the manual.
PKFONTS = .;{$dbfonts,$VARTEXFONTS}/pk/$MAKETEX_MODE//

% xdvi needs to find bitmaps for PostScript fonts, which can be
% generated by the standalone program gsftopk, among others.
PKFONTS.xdvi = .;{$dbfonts,$VARTEXFONTS}/pk/{$MAKETEX_MODE,modeless}//

% Similarly for the GF format, which only remains in existence because
% Metafont outputs it (and MF isn't going to change).
GFFONTS = .;$dbfonts/gf/$MAKETEX_MODE//

% A backup for PKFONTS and GFFONTS. Not used for anything.
GLYPHFONTS = .;$dbfonts

% For texfonts.map and included map files used by MakeTeXPK.
% See ftp;//ftp.tug.org/tex/fontname.tar.gz.
TEXFONTMAPS = .;{$TEXMFLOCAL,$dbmain}/fontname

% BibTeX bibliographies and style files.
BIBINPUTS = .;{$TEXMFLOCAL,$dbmain}/bibtex/bib//
BSTINPUTS = .;{$TEXMFLOCAL,$dbmain}/bibtex/bst//

% MFT style files.
MFTINPUTS = .;{$TEXMFLOCAL,$dbmain}/mft//

% PostScript headers, prologues (.pro), encodings (.enc) and fonts.
TEXPSHEADERS = .;$TEXMFLOCAL/dvips;$dbmain/dvips//;$dbfonts/type1//

% PostScript Type 1 outline fonts.
T1FONTS = .;$dbfonts/type1//;$TEXMFLOCAL/dvips//;$dbmain/dvips//

% PostScript AFM metric files.
AFMFONTS = .;$dbfonts/afm//

% Dvips' config.* files (this name should not start with 'TEX'!).
TEXCONFIG = .;$TEXMFLOCAL/dvips;$dbmain/dvips//

% Makeindex style (.ist) files.
INDEXSTYLE = .;{$TEXMFLOCAL,$dbmain}/makeindex//

```

```
% Used by DMP (ditroff-to-mpx), called by makempx -troff.
TRFONTS = /usr/lib/font/devpost
MPSUPPORT = .;{$TEXMFLOCAL,$dbmain}/metapost/support

% For xdvi to find mime.types and .mailcap, if they do not exist in
% $HOME.  These are single directories, not paths.
% (But the default mime.types, at least, may well suffice.)
MIMELIBDIR = $prefix/etc
MAILCAPLIBDIR = $prefix/etc

% TeX documentation and source files, for use with kpsewhich.
TEXDOCS = .;{$TEXMFLOCAL,$dbmain}/doc//
TEXSOURCES = .;{$TEXMFLOCAL,$dbmain}/source//

% Omega-related fonts and other files.
OFMFONTS = .;{$dbfonts,$VARTEXFONTS}//ofm//
OPLFONTS = .;{$dbfonts,$VARTEXFONTS}//opl//
OVFFONTS = .;{$dbfonts,$VARTEXFONTS}//ovf//
OVPFONTS = .;{$dbfonts,$VARTEXFONTS}//ovp//
OTPINPUTS = .;{$TEXMFLOCAL,$dbmain}/omega/otp//
OCPINPUTS = .;{$TEXMFLOCAL,$dbmain}/omega/ocp//

% For MakeTeX.common, MakeTeX.site, ls-R.
web2cdir = {$TEXMFLOCAL,$dbmain}/web2c
TEXMFCNF_DIR = $TEXMFMAIN/web2c

% The MakeTeX* scripts rely on KPSE_DOT. Do not change it.
KPSE_DOT = .

% This definition isn't used from this .cnf file itself (that would be
% paradoxical), but the compile-time default in paths.h is built from it.
% The SELFAUTO* variables are set automatically from the location of
% argv[0], in kpse_set_progname.
%
% About the /. construction;
% 1) if the variable is undefined, we'd otherwise have an empty path
%    element in the compile-time path.  This is not meaningful.
% 2) if we used /$VARIABLE, we'd end up with // if VARIABLE is defined,
%    which would search the entire world.
%
% The TETEXDIR stuff isn't likely to relevant unless you're using teTeX,
% but it doesn't hurt.
%
TEXMFCNF =.;$SELFAUTOLOC;$SELFAUTODIR;$SELFAUTODIR/share/texmf/web2c;$SELFAUTOPARENT;\
$SELFAUTOPARENT/share/texmf/web2c;/.$TETEXDIR;/.{$TEXMFLOCAL,$dbmain}/web2c;$web2cdir

%  Part 2; Non-path options.

% Write .log/.dvi/etc. files here, if the current directory is unwritable.
% TEXMFOUTPUT = /tmp

% If a dynamic file creation fails, log the command to this file, in
% either the current directory or TEXMFOUTPUT.  Set to the
% empty string or  0  to avoid logging.
MISSFONT_LOG = missfont.log

% Set to a colon-separated list of words specifying warnings to suppress.
% To suppress everything, use TEX_HUSH = all; this is equivalent to
% TEX_HUSH = checksum;lostchar;readable;special
```

```
TEX_HUSH = 0

% Enable system commands via \write18{...}?
shell_escape = 0

% Allow TeX \openout on filenames starting with `.' (e.g., .rhosts)?
openout_any = 0

% Enable the MakeTeX... scripts by default?  These must be set to 0 or 1.
% Particular programs can and do override these settings, for example
% dvips's -M option.  Your first chance to specify whether the scripts
% are invoked by default is at configure time.
%
% These values are ignored if the script names are changed; e.g., if you
% set DVIPSMAKEPK to `foo', what counts is the value of the environment
% variable/config value `FOO', not the `MAKETEXPK' value.
%
% MAKETEXTEX = 0
% MAKETEXPK = 0
% MAKETEXMF = 0
% MAKETEXTFM = 0

% What MetaPost runs to make MPX files.  This is passed an option -troff
% if MP is in troff mode.  Set to `0' to disable this feature.
MPXCOMMAND = makempx

%  Part 3; Array and other sizes for TeX (and Metafont and MetaPost).
%
% If you want to change some of these sizes only for a certain TeX
% variant, the usual dot notation works, e.g.,
% main_memory.hugetex = 20000000
%
% If a change here appears to be ignored, try redumping the format file.

% Memory. Must be less than 8,000,000.
%
% main_memory is relevant only to initex, extra_mem_* only to non-ini.
% Thus, have to redump the .fmt file after changing main_memory; to add
% to existing fmt files, increase the other.  (To get an idea of how
% much, try \tracingstats=2 in your TeX source file;
% web2c/tests/memtest.tex might also be interesting.)
%
% To increase space for boxes (as might be needed by, e.g., PiCTeX),
% increase extra_mem_bot.
%
main_memory = 263000 % words of memory available; also applies to mf&mp
main_memory.hugetex = 1100000
extra_mem_top = 0    % extra high memory for chars, tokens, etc.
extra_mem_bot = 0    % extra low memory for boxes, glue, breakpoints, etc.

% Words of font info for TeX (total size of all TFM files, approximately).
font_mem_size = 100000
font_mem_size.hugetex = 400000
font_mem_size.pdftex = 400000

% Total number of fonts. Must be >= 50 and <= 2000 (without tex.ch changes).
font_max = 500
font_max.hugetex = 900

```

```
% Extra space for the hash table of control sequences (which allows 10K
% names as distributed).
hash_extra = 0
hash_extra.hugetex = 10000
hash_extra.pdftex = 10000

% Max number of characters in all strings, including all error messages,
% help texts, font names, control sequences.  These values apply to TeX and MP.
pool_size = 125000
pool_size.hugetex = 500000
pool_size.pdftex = 500000
% Minimum pool space after TeX/MP's own strings; must be at least
% 25000 less than pool_size, but doesn't need to be nearly that large.
string_vacancies = 25000
string_vacancies.hugetex = 45000
string_vacancies.pdftex = 45000
max_strings = 15000             % max number of strings
max_strings.hugetex = 55000             % max number of strings
max_strings.pdftex = 55000              % max number of strings
pool_free = 5000                % min pool space left after loading .fmt

% Hyphenation trie. As distributed, the maximum is 65535; this should
% work unless 'unsigned short' is not supported or is smaller than 16
% bits.  This value should suffice for UK English, US English, French,
% and German (for example).  To increase, you must change
% 'ssup_trie_opcode' and 'ssup_trie_size' in tex.ch (and rebuild TeX);
% the trie will then consume four bytes per entry, instead of two.
%
% US English, German, and Portuguese; 30000.
% German; 14000.
% US English; 10000.
%
trie_size = 64000

hyph_size = 1000        % number of hyphenation exceptions, >610 and <32767.
buf_size = 3000         % max length of input lines or control sequence names
nest_size = 100         % simultaneous semantic levels (e.g., groups)
max_in_open = 15        % simultaneous input files and error insertions
param_size = 500        % simultaneous macro parameters
save_size = 4000        % for saving values outside current group
save_size.pdftex = 30000        % for saving values outside current group
save_size.hugetex = 30000       % for saving values outside current group
stack_size = 300        % simultaneous input sources

% These work best if they are the same as the I/O buffer size, but it
% doesn't matter much.  Must be a multiple of 8.
dvi_buf_size = 16384 % TeX
gf_buf_size = 16384  % MF

% It's probably inadvisable to change these. At any rate, we must have:
% 45 < error_line      < 255;
% 30 < half_error_line < error_line - 15;
%      max_print_line  < 60 ;
% These apply to Metafont and MetaPost as well.
error_line = 79
half_error_line = 50
max_print_line = 79
```

B Catalogue of Packages

Table 1: **TEX Live** packages

Package	*Collection*	*Description*
a4	latex3	Originally for LaTeX 2.09 but updated for LaTeX 2ε. Mostly superseded by LaTeX 2ε support for a4 paper but defines the extra option of widemargins. The geometry package is usually better.
aiaa	latex3	A bundle of LaTeX/BibTeX files and sample documents to aid those producing papers and journal articles according to the guidelines of the American Institute of Aeronautics and Astronautics (AIAA)
achemso	latex3	LaTeX and BibTeX style for American Chemical Society
acronym	latex3	This package ensures that all acronyms used in the text are spelled out in full at least once. It also provides an environment to build a list of acronyms.
adrlist	latex3	Using address lists in LaTeX.
aguplus	latex3	Styles for American Geophysical Union.
alatex	formats3	An extended LaTeX with better modularity
alg	latex3	LaTeX environments for typesetting algorithms
algorithms	latex3	Defines a floating algorithm environment designed to work with the algorithmic package.
alpha-linux	systems1	System binaries for Alpha running Linux.
alpha-osf3.2	systems1	System binaries for Alpha running OSF 3.2.
altfont	latex3	A generalised replacement for some parts of psnfss and mfnfss. Similar to psfont with the PostScript specific code removed.
amiweb2c	systems1	An Amiga port of the complete UNIX-TeX system.
amsfonts	ams2	A set of miscellaneous TeX fonts from the American Mathematical Society that augment the standard set normally distributed with TeX. The set includes: Extra mathematical symbols; Blackboard bold letters (uppercase only); Fraktur letters; Subscript sizes of bold math italic and bold Greek letters; Subscript sizes of large symbols such as sum and product; Added sizes of the Computer Modern small caps font; Cyrillic fonts (from the University of Washington); Euler math fonts.
amslatex	ams2	A collection of loosely related files that are distributed together by the American Mathematical Society. These files are miscellaneous enhancements to LaTeX whose aim is superior information structure of mathematical documents and superior printed output.
amstex	ams2	American Mathematical Society plain TeX macros
answers	latex3	Styles for setting questions (or exercises) and answers.
apa	latex3	LaTeX class and BibTeX style used to format text according to the American Psychological Association Publication Manual (4th ed.) specifications for manuscripts or, with an option to the package, in an APA journal style format or as a regular document.
apl	fonts3	Fonts for typesetting APL programs.
arabtex	lang3	Macros and fonts for typesetting Arabic
arseneau	latex2	Miscellaneous macros by Donald Arseneau.
ascii	fonts3	Support for IBM extended ASCII font.
astro	fonts3	Astronomical (planetary) symbols.
aurora	dvips3	Header files for dvips to make colour separations
autotab	latex3	Generating tabular setups.
babel	latex1	Multilingual support for LaTeX.
backgammon	fonts3	Style for typesetting backgammon boards.
bakoma	fonts2	Computer Modern and AMS fonts in PostScript Type1 form.
barcodes	fonts3	Fonts for making barcodes.
barr	graphics3	Diagram macros by Michael Barr.
base	latex1	Basic LaTeX system.
bbding	fonts3	An NFSS-interface to the symbol font bbding containing many of the Zapf dingbats fonts.

Catalogue of Packages *continued*

Package	*Collection*	*Description*
bbm	fonts3	Blackboard variant fonts for Computer Modern, with LaTeX support
bbtbase	bibtex1	Basic BibTeX styles.
bbtdoc	bibtex2	Basic BibTeX documentation/
beebe	bibtex2	Nelson Beebe's collection of TeX-related bibliographies, and BibTeX style files
beton	latex3	Typeset a LaTeX 2_ε document with the Concrete fonts designed by Don Knuth and used in his book "Concrete Mathematics".
biblist	latex3	BibTeX styles by Joachim Schrod.
blue	formats3	Kees van der Laan's BLUe format, a concise but expressive document preparation system modelled on Knuth's manmac
bm	latex2	This is a package for accessing bold symbols in math mode. (Similar to the AMS `\boldsymbol` command, but taking more care over spacing, delimiters etc.).
booktabs	latex2	Nicer layout of tables
borceux	graphics3	Diagram macros by Francois Borceux
bridge	latex3	Macros for typesetting Bridge diagrams.
calc	latex2	Adds infix expressions to perform arithmetic in the LaTeX commands `\setcounter`, `\addtocounter`, `\setlength`, and `\addtolength`.
calendar	plain3	Plain macros for making nice calendars
calrsfs	latex3	Nicer calligraphic letters.
camel	latex3	Comprehensive bibliography manager (prototype citation engine for LaTeX3). Will become BibTeX 1.0 on release. Under development.
caption	latex2	Extends caption capabilities for figures and tables, such as the caption width, style, font. Many aspects are tunable as options.
carlisle	latex2	Miscellaneous small packages by David Carlisle
ccfonts	latex	LaTeX support for Concrete fonts.
cchess	fonts3	Macros and fonts for typesetting Chinese Chess board diagrams.
cellular	plain3	Cellular table construction
changebar	latex2	Generate changebars in LaTeX documents.
chemcono	latex3	A LaTeX style file for using compound numbers in chemistry documents. It works like `\cite` and the `\thebibliography`, using `\fcite` and `\theffbibliography` instead. It allows compound names in documents to be numbered and does not affect the normal citation routines.
chemsym	latex3	Macros for typing chemical symbols
cheq	fonts3	Adobe chess font.
cherokee	fonts3	Fonts for Cherokee scripts
chess	fonts3	Fonts for typesetting chess boards.
circ	graphics3	Macros for typesetting circuit diagrams. Several electrical symbols like resistor, capacitor, transistors etc., are defined. The symbols can be connected with wires.
circuit	graphics3	Language for drawing circuit diagrams.
cirth	fonts3	Fonts for Cirth
cite	latex2	Supports compressed, sorted lists of numerical citations: [8,11–16].
cm	fonts1	Computer Modern fonts
cmbright	fonts2	Computer Modern Bright fonts
cmcyralt	latex3	Alternative Russian encoding support
cmextra	fonts2	Extra Computer Modern fonts, from the American Mathematical Society
cmpica	fonts3	A Computer Modern Pica variant
cmps	fonts2	Type1 versions of PostScript fonts, from Blue Sky and Y&Y.
codepage	latex3	Support for variant code pages.
colorsep	dvips3	Support for colour separation when using dvips
concmath	fonts3	Concrete math fonts derived from Computer Modern math fonts using parameters from Concrete text fonts. A LaTeX package providing the necessary font definition code is included.
concrete	fonts3	Concrete fonts

Catalogue of Packages *continued*

Package	*Collection*	*Description*
context	generic3	ppchtex is a package that can be used to typeset chemical formulas. The package is a separate module of the context macro package for TEX (context is a full featured, parameter driven macro package, which fully supports advanced interactive documents).
count1to	latex3	Setting `\count1` to `\count9`
croatian	lang3	Fonts for typesetting Croatian scripts
crosswrd	latex3	Macros for typesetting crossword puzzles.
csfonts	fonts2	Czech/Slovak-tuned METAFONT Computer Modern fonts.
cslatex	latex	LATEX support for Czech/Slovak typesetting.
csplain	plain2	Plain TEX support for Czech/Slovak typesetting.
curves	graphics3	Draws curves in the LATEX picture environment using parabolas between points with continuous slope at points. Equivalent to technical pens with compasses and French curves.
custom-bib	latex2	Package generating customized BIBTEX bibliography styles from a generic file using docstrip.
dancers	fonts3	Font for the Sherlock Holmes 'Dancing Men'
dates	latex3	Macros for parsing date strings.
deleq	latex3	Provides a more flexible numbering of equations, subequations, and 'recycled' equations, including 'partial' equation numbers ('3a', '3b' etc.).
devanagari	lang3	Fonts for typesetting Devanagari
dialogl	latex3	Macros for constructing interactive LATEX scripts
dinbrief	latex3	German letter DIN style.
doc1	texlive1	Basic documentation for **TEX Live**.
doc2	texlive2	Recommended documentation for **TEX Live**.
dotseqn	latex3	Flush left equations with dotted letters to the numbers
draftcopy	latex3	Places the word DRAFT (or other words) in light grey diagonally across the background (or at the bottom) of each (or selected) pages of the document.
dratex	graphics3	General drawing macros entirely in TEX
dropping	latex3	A LATEX 2_ε macro for dropping the first character(s) (or word(s)) of a paragraph. This is an extension of the LATEX 2.09 package dropcaps. This package automatically takes care of finding the font name.
dtk	latex3	Macros for the DANTE publication.
duerer	fonts3	Computer Duerer fonts.
dvips	generic1	Tom Rokicki's dvi to PostScript driver
dvipsbas	dvips1	Basic support files for dvips.
ean	generic3	Font for making EAN barcodes.
easy	latex3	Macros for simplying the writing of equations.
ec	fonts2	The ec fonts support the complete LATEX T1 encoding, as defined at the 1990 TUG conference hold at Cork/Ireland. They are intended to be as stable as the cm fonts are, i.e., there shall be no more changes to the tfm files. The ec fonts also contain a Text Companion Symbol font, called tc, featuring many useful characters needed in typesetting, for example oldstyle digits, currency symbols (including the newly created Euro symbol), the permille sign, copyright, trade mark and servicemark as well as a copyleft sign, and many others. Recent releases of LATEX 2_ε support the ec fonts. The dc fonts, which were termed as preliminary versions, will dissappear from the archives.
ecc	fonts3	'European' (T1 encoded) version of the Concrete fonts.
edmac	plain3	A macro package for typesetting scholarly critical editions
eepic	graphics2	A set of TEX macros for LATEX implementing several extensions to EPIC and the LATEX picture drawing environment, including the drawing of lines at any slope, the drawing of circles in any radii, and the drawing of dotted and dashed lines much faster with much less TEX memory, and providing several new commands for drawing ellipses, arcs, splines, and filled circles and ellipses.

Catalogue of Packages *continued*

Package	*Collection*	*Description*
eiad	latex3	Macros and EIAD fonts.
elsevier	latex3	Preprint style for Elsevier Science journals
elvish	fonts3	Font for typesetting Tolkien Elvish script
endfloat	latex3	Place all figures on pages by themselves at the end of the document with markers like "[Figure 3 about here]" appearing in the text (by default) near to where the figure (or table) would normally have occurred.
engwar	fonts3	Font for typesetting Tolkien Engwar script, by Michael Urban
envbig	latex3	Printing addresses on envelopes
envlab	latex3	A LaTeX 2_ε package for producing mailing envelopes and labels, including barcodes and address formatting according to the US Postal Service rules. Redefines the standard `\makelabels` command of the LaTeX 2_ε letter documentclass.
eplain	formats2	Simple but powerful extended version of the plain format, adding support for bibliographies, tables of contents, enumerated lists, verbatim input of files, numbered equations, tables, two-column output, footnotes and commutative diagrams.
epslatex	doc2	An extensive document which explains how to use Encapsulated PostScript (EPS) files in LaTeX 2_ε documents. Includes explanations of Bounding Boxes, and more.
eqname	latex3	Style for different equation numbering.
eqnarray	latex3	More generalised equation arrays with numbering.
euler	latex3	Provides a setup for using the AMS Euler family of fonts for math in LaTeX documents. "The underlying philosophy of Zapf's Euler design was to capture the flavor of mathematics as it might be written by a mathematician with excellent handwriting." [concrete-tug] The euler package is based on Knuth's macros for the book "Concrete Mathematics". The text fonts for the Concrete book are provided by the beton package.
everysel	latex3	LaTeX package which provides hooks into `\selectfont`.
everyshi	latex3	Hooks for taking action at every `\shipout`
exam	latex3	Package for typesetting exam scripts.
exams	latex3	Exam questions can be multiple choice or free form long/short answer questions. Options include the typesetting of the exam itself, an exam showing all the answers and a collection of questions and answers. Questions can be parametrized. Use of a random generator provides for automatic shuffling of multiple choice items.
expdlist	latex3	Expanded description environments
export	latex3	This package allows the user to export/import the values of LaTeX registers (counters, rigid and rubber lengths only). It is definitely NOT for faint-hearted users.
fancyhdr	latex3	Support for sophisticated control of page headers and footers in LaTeX 2_ε. It supersedes fancyheadings.
fancyheadings	latex2	Better control over page headers and footers in LaTeX. This is an up-to-date version for LaTeX. For LaTeX 2_ε it is now called fancyhdr.
fancyvrb	latex2	Sophisticated handling of verbatim text, to write it out, read it in, and typeset it
fax	latex3	Document class for preparing faxes.
fc	fonts3	Fonts for African languages, complementary to Computer Modern.
feynmf	graphics3	Macros and fonts for creating Feynman (and other) diagrams.
float	latex2	Improves the interface for defining floating objects such as figures and tables. Introduces the boxed float and the ruled float. You can define your own floats and improve the behaviour of the old ones. Also incorporates the H option of the superseded here package. You can select this as automatic default with `\floatplacement{figure}{H}`.
floatfig	latex3	Allows text to be wrapped around figures.

Catalogue of Packages *continued*

Package	*Collection*	*Description*
floatflt	latex3	Float text around figures and tables which do not span the full width of a page. This is an improved version of floatfig. It is more or less similar to floatingtable. The tables/figures can be set left/right or alternating on even/odd pages. Works with the multicol package. Doesn't work well in the neighbourhood of list environments unless you change your LaTeX document.
fncychap	latex3	This package provides six predefined chapter headings. Each can be modified using a set of simple commands. Optionally one can modify the formatting routines in order to create additional chapter headings. This package was previously known as FancyChapter.
foiltex	latex3	A LaTeX 2_ε class for overhead transparencies. Can be used with fancybox to place a variety of borders around the slides.
fontinst	latex3	TeX macros for converting Adobe Font Metric files to TeX metric and virtual font format
fontmisc	fonts1	Miscellaneous METAFONT input files
fontname	texlive1	Karl Berry's scheme for naming fonts in TeX
fonts	latex1	Extra line and circle fonts for LaTeX
footnote	latex3	More sophisticated footnotes.
footnpag	latex3	Allows footnotes on individual pages to be numbered from 1, rather than being numbered sequentially through the document.
formats	texlive2	Prebuilt TeX format and METAFONT base files
fp	latex3	Provides an extensive collection of arithmetic operations for fixed point real numbers of high precision.
french	lang2	Style for French typography
fribrief	latex3	A LaTeX class for writing letters.
fundus	latex3	Providing LaTeX access to various font families.
futhark	fonts3	Fonts for the Older Futhark script
g-brief	latex3	A document class for LaTeX 2_ε. Serves for formatting formless letters in german or english language.
gb4e	latex3	Government Binding styles.
general	doc1	Useful general documentation.
genmisc	generic3	Miscellaneous small files for all formats, specific to the **TeX Live** CD-ROM.
geometry	latex3	A package which allows LaTeX 2_ε users to customise page layout (page sizes) using an easy and flexible user interface. You can specify `\geometry{body={6.5in,8.75in}, top=1.2in, left=2cm, nohead}`. This is an update of the now superseded pagesize package.
german	latex2	Style for German typography.
germbib	bibtex2	German variants of standard BibTeX styles.
go	fonts3	Fonts and macros for typesetting go games.
gothic	fonts3	Gothic and ornamental initial fonts by Yannis Haralambous.
graphics	latex2	The primary LaTeX package for the support of the inclusion of graphics generally produced with other tools. This package aims to give a consistent interface to including the file types that are understood by your printer driver.
gray	fonts3	Fonts for gray scales
hands	fonts3	Pointing hand fonts
harpoon	latex3	Extra harpoons, using the graphics package
harvard	bibtex2	The Harvard bibliography style family.
harvmac	plain3	Paul Ginsparg's Harvard macros for scientific articles
hh	latex3	Fancy boxing effects
histogr	latex3	Drawing histograms with the LaTeX picture environment.
hppa1.1-hpux10.20	systems1	System binaries HP running hpux10.20.
hppa1.1-hpux9.05	systems1	System binaries HP running hpux9.05.
html	doc2	Various TeX documentation converted to HTML

Catalogue of Packages *continued*

Package	*Collection*	*Description*
hyper	latex3	Redefines LaTeX cross-referencing commands to insert `\special` commands for HyperTeX dvi viewers
hyperref	latex3	Redefines LaTeX cross-referencing commands to insert `\special` commands for HyperTeX dvi viewers, or translation to Acrobat.
hyphen	lang1	Collection of hyphenation patterns.
i386-linux	systems1	System binaries for Intel machines running Linux.
i586-freebsd2.2	systems1	System binaries for Intel PC running FreeBSD 2.2.
i686-linux	systems1	System binaries for Intel Pentium Pro running Linux.
ieeepes	latex3	Allows typesetting of transactions, as well as discussions and closures, for the IEEE Power Engineering Society Transactions journals.
ifacmtg	latex3	Elsevier Science preprint style for IFAC meetings.
indxcite	latex3	A package to automatically generate an Author Index based on citations made using BibTeX. It requires the use of the harvard and index packages and LaTeX 2_ε.
info	doc2	Documentation in GNU info form
inputenc	latex3	Controlling inpout encoding
ipa	latex3	Style for using International Phonetic Alphabet fonts
isostds	latex3	Class and package files for typesetting ISO International Standard documents. Several standard documents have been printed by ISO from camera-ready copy prepared using LaTeX and these files. One set of files is for generic ISO typesetting and the other is an extension set of packages for typesetting ISO 10303 standards.
jadetex	latex3	Macro package on top of LaTeX to typeset TeX output of Jade DSSSL implementation.
jknappen	latex2	Miscellaneous macros, mostly for making use of extra fonts, by Jörg Knappen.
jsmisc	plain3	Miscellaneous useful macros by Joachim Schrod.
jura	latex3	A document class for German law students.
knuth	doc3	Knuth's own documentation, including the TeXbook and the METAFONTbook
koma-script	latex3	A replacement for the article/report/book classes with emphasis on European rules of typography and paper formats as laid down by Jan Tschichold.
kuvio	graphics3	Drawing macros and fonts for diagrams.
labels	latex3	Support for printing sheets of sticky labels (but could also be used for business cards). The number of rows and columns of labels, and their size, can be changed.
lamstex	formats3	A merge of the best in AMSTeX and LaTeX
lastpage	latex3	Reference the number of pages in your LaTeX document (as in a page footer that says: Page N of M).
lgreek	latex3	Macros for using Silvio Levy's Greek fonts
lineno	latex3	Adds line numbers to selected paragraphs with reference possible through the LaTeX `\ref` and `\pageref` cross reference mechanism. Version 2.00 supports numbering of one in five lines and switching the line numbers from the left to the right side of the page in twoside mode.
listings	latex3	Package for pretty-printed program listings, with support for a range of languages.
localloc	latex3	Macros for localizing TeX register allocations
logic	fonts3	METAFONT font for drawing logic diagrams.
lollipop	formats3	A new generation format
lshort	latex1	Short introduction to LaTeX.
ltablex	latex3	Modifies the tabularx environment to combine the features of the tabularx package (auto-sized columns in a fixed width table) with those of the longtable package (multi-page tables).
ltxdoc	latex1	Class for documented LaTeX 2_ε classes.
ltxmisc	latex2	Miscellaneous LaTeX styles.

Catalogue of Packages *continued*

Package	*Collection*	*Description*
lw35ps	fonts2	Font metrics and LaTeX font description files for standard 35 PostScript fonts.
ly1	latex3	Support for LY1 LaTeX encoding, i.e. the Y&Y texnansi encoding.
mab-nextstep3	systems1	System binaries for Next boxes running NextStep 3.
mailing	latex3	Macros for mail merging
makeindex	texlive1	Documentation for the MakeIndex program.
malvern	fonts3	A new sans-serif font family
mapcodes	latex3	Support for multiple character sets and encodings.
maple	latex3	Styles and examples for the MAPLE newsletter.
mathcomp	latex2	A package which provides access to some interesting characters of the Text Companion fonts (TS1 encoding) in math mode.
mcite	latex3	Support for collapsing multiple citations into one, as customary in physics journals
mdwtools	latex3	Miscellaneous tools by Mark Wooding, including support for `@`, a doafter command, footnotes, mathenv for various alignment in maths, list handling, trivial maths oddments, rewrite of LaTeX's `tabular` and `array` environments, verbatim handling, and syntax diagrams.
mff	latex3	A package to provide something similar to 'multiple master' fonts, but using METAFONT; you specify a font by a set of METAFONT parameters, and TeX makes up a .mf file to generate the required font; this package is not integrated with NFSS (or MakeTeXTFM) yet fun.
mflogo	latex1	LaTeX package and font definition file to access the Knuthian 'logo' fonts described in 'The METAFONTbook' and the METAFONT and MetaPost logos in LaTeX documents.
mfmisc	fonts1	Small support files for METAFONT.
mfnfss	latex3	Font description files for extra fonts like yinit and ygoth
mfpic	graphics3	Macros which generate METAFONT code for drawing pictures.
mftoeps	fonts3	a METAFONT package for generating (encapsulated PostScript) files readable by CorelDRAW!, Adobe Illustrator and Fontographer. METAFONT writes PostScript code to a LOG-file, and from the LOG-file the code can be extracted by either TeX or AWK. DOS batch files, TeX source, and AWK source are placed in the subdirectory PROGS.
midnight	generic3	A set of useful macro tools
minitoc	latex3	Table of contents per chapter.
mips-irix4.0.5	systems1	System binaries for SGI box running Irix 4.0.5.
mips-irix5.3	systems1	System binaries for SGI box running Irix 5.3.
mips-irix6.3	systems1	System binaries for SGI box running Irix 6.3.
mips-ultrix4.4	systems1	System binaries for MIPS machine running Ultrix 4.4.
misc	latex3	Miscellaneous small macro files for LaTeX.
misc209	latex2	Miscellaneous small macro files for LaTeX2.09.
mnras	plain3	Styles for the Monthly Notices of the Royal Astronomical Society.
monster	latex3	Towards a more rational and modular LaTeX, by Matt Swift; a set of powerful tools
moreverb	latex3	A verbatim mode that can handle TABs properly, can number lines, can number lines in an included file, can produce boxed verbatims, etc.
mpbase	metapost1	Basic MetaPost support files.
mpfnmark	latex3	A package which provides the command `\mpfootnotemark`, which can be used in the same way as `\footnotemark`. The difference between these two macros is that within minipage environments the latter uses the standard footnote marker style (defined by `\thefootnote`), while the new command uses the minipage footnote marker style (defined by `\thempfootnote`).
mslapa	latex3	LaTeX and BibTeX style files for a respectably close approximation to APA (American Psychological Association) citation and reference style.
mtbe	plain3	Examples from *Mathematical TeX by Example* by Arvind Borde
musictex	generic3	Typesetting music with TeX.
musixtex	generic3	Extended MusicTeX, with better slurs

Catalogue of Packages *continued*

Package	*Collection*	*Description*
myletter	latex3	Another letter package.
nassflow	latex3	Drawing Nassi-Schneidermann diagrams.
natbib	bibtex2	A bibliography style that handles author-year and numbered references.
newalg	latex3	Format algorithms like Cormen, Leiserson and Rivest.
newsletr	plain3	Macros for making newsletters
newthm	latex3	A modified version of the theorem-style which provides generation of lists of theorems.
niceframe	latex3	Support for fancy framing of pages
nomencl	latex3	Nomenclature package for producing lists of symbols using the capabilities of the MakeIndex program.
ntgclass	latex2	Versions of the standard LaTeX article and report classes, rewritten to reflect a more European design, by the Dutch TeX Users Group
numline	latex3	Macros for numbering lines.
objectz	latex3	Macros for typesetting Object Z
oca	fonts3	OCR font
ocr-a	fonts3	Fonts for OCR-A
ocr-b	fonts3	Fonts for OCR-A
ogham	fonts3	Fonts for typesetting Ogham script
ogonek	latex3	Support for Polish typography and the ogonek
oldstyle	latex3	Font information needed to load the `cmmi` and `cmmib` fonts for use to produce oldstyle numbers
osmanian	fonts3	Osmanian fonts by Alan Stanier for writing Somali
ot2cyr	fonts2	Macros to use to the OT2 Cyrillic encoding
overword	latex3	This package provides two macros which can be used as building blocks for the parsing of text. For an example of their use, see the calendar package.
pandora	fonts3	The Pandora font family
paper	latex3	A class derived from article, tuned for producing papers for journals. Introduces new layout options and font commands for sections/parts. Defines a new keywords environment, and subtitle and institution commands for the title section. New commands for revisions. And more.
parallel	latex3	Provides a parallel environment which allows two columns of text to be typeset. Useful for typesetting two languages side-by-side.
patch	latex3	Macros for package management.
pb-diagram	latex3	Diagram package, using LAMSTeX fonts, by Paul Burchard.
pdcmac	plain3	Damian Cugley's macro tools.
pdf	doc2	Documentation in PDF format.
pdftex	plain2	Macro packages for variant TeX which writes PDF format.
phonetic	fonts3	METAFONT Phonetic fonts, based on Computer Modern
physe	formats3	PHYSE format
phyzzx	formats3	A TeX format for physicists
picinpar	latex3	Insert pictures into paragraphs. (NOTE: Piet van Oostrum does not recommend this package. Picins is recommended instead.)
pictex	graphics2	Picture drawing macros for LaTeX.
piff	latex3	Macro tools by Mike Piff
plainmisc	plain1	Miscellaneous useful macros for plain TeX
plaintex	plain1	Basic Plain TeX macros
plfonts	fonts3	Computer Modern variant fonts for Polish
plgraph	generic3	LaTeX graphics package with wrapper to allow it to be used with generic plain TeX
pmgraph	latex3	A set of extensions to LaTeX picture environment, including a wider range of vectors, and a lot more box frame styles.
poligraf	generic3	Page preparation for prepress, color separation, crop-marks, color and gray scale bars, booklet preparation, etc.
prelim2e	latex3	Allows the marking of preliminary versions of a document

Catalogue of Packages *continued*

Package	*Collection*	*Description*
prettyref	latex3	Additional functionality to LaTeX 2ε label–reference mechanism. It allows the author to "preformat" all types of labels.
progkeys	latex3	The file 'programs.sty' is intended to allow a parameterized way of typesetting programs with TeX/LaTeX commands inside. The file 'keywords.sty' allows use and define sets of keywords that will be typeset with different fonts, according to the wish of the user.
program	latex3	Typesetting programs and algorithms
proofs	latex3	Macros for building proof trees.
psfonts	fonts2	PostScript fonts for use with TeX and LaTeX.
psfrag	graphics2	A set of macros and a PostScript header which allows LaTeX constructions (equations, picture environments, etc.) to be precisely superimposed over Encapsulated PostScript figures. The user can use his/her favorite drawing tool to create an EPS figure, placing simple text "tags" where each replacement is to be placed. PSfrag will automatically remove those tags from the figure and replace them with the LaTeX construction that the user specifies, properly aligned, scaled, and/or rotated.
psizzl	formats3	A TeX format from SLAC
pslatex	latex2	A small package that makes LaTeX default to 'standard' PostScript fonts. It is basically a merger of the times and mathptm styles from the psnfss suite of packages. You must have installed standard LaTeX and PSNFSS PostScript fonts to use this package. The main novel feature is that the pslatex package tries to compensate for the visual differences between the Adobe fonts by scaling Helvetica by 90%, and 'condensing' Courier (i.e. scaling horizontally) by 85%. The package is supplied with a (unix) shell file for a 'pslatex' command that allows standard LaTeX documents to be processed, without needing to edit the file.
psnfss	fonts2	Font definition files, macros and font metrics for common PostScript fonts
psnfssx	latex3	Extra styles and encodings for PS fonts, including Y&Y encoding support.
pspicture	latex2	Replacement for core LaTeX picture macros to use PostScript `\special` commands
pstricks	graphics2	An extensive collection of PostScript macros that is compatible with most TeX macro packages, including Plain TeX, LaTeX, AMS-TeX, and AMS-LaTeX. Included are macros for color, graphics, pie charts, rotation, trees and overlays. It has many special features, including: a wide variety of graphics (picture drawing) macros, with a flexible interface and with color support. There are macros for coloring or shading the cells of tables.
punk	fonts3	Donald Knuth's punk font
qobitree	graphics3	LaTeX macros for typesetting trees
qsymbols	latex3	For defining systematic mnemonic abbreviations, starting with ‘ for math symbols and \" for arrows, from the amssymb and stmaryrd packages
ragged2e	latex3	LaTeX package which defines new commands `\Centering`, `\RaggedLeft`, and `\RaggedRight` and new environments Center, FlushLeft, and FlushRight, which set ragged text and are easily configurable to allow hyphenation.
rcs	latex3	Use RCS (revision control system) tags in LaTeX documents.
realcalc	plain3	Macros for real arithmetic calculations.
refman	latex3	Variant report and article styles
revtex	latex2	Styles for American Physical Society, American Institute of Physics, and Optical Society of America. Only works in compatibility mode under LaTeX 2ε.
rlepsf	generic3	A macro package for use with epsf.tex which allows PostScript labels in an eps file to be replaced by TeX labels.
rotating	latex2	A package built on the standard LaTeX graphics package to perform all the different sorts of rotation one might like, including complete figures and tables and captions.
rotfloat	latex3	Rotate floats.

Catalogue of Packages *continued*

Package	*Collection*	*Description*
rplain	latex3	Redefines the 'plain' pagestyle. The page numbers are now in the lower right corner.
rs6000-aix3.2.5	systems1	System binaries for RS6000 running AIX 3.2.5.
rs6000-aix4.1.1	systems1	System binaries for RS6000 running AIX 4.1.1.
sauter	fonts3	Extensions to the CM fonts, providing a parameterization scheme to build fonts at true design sizes
scale	latex3	A package to scale a document by $\sqrt{2}$. This is useful if you are preparing a document on e.g. A5 paper and want to print on A4 paper to achieve a better resolution.
script	latex3	Variant report / book styles
semantic	latex3	Eases the typesetting of notation of semantics and compilers. Includes T-diagrams, various derivation symbols and inference threes.
seminar	latex2	Produce overhead slides (transparencies) with bells and whistles.
setspace	latex3	Provides commands and environments for doing double and one-and-a-half line spacing based on pt size. If a different spacing is required then the `\setstretch{baselinestretch}` command is supported. The spacing environment takes one argument which is the baselinestretch to use, e.g., `\begin{spacing}{2.5}`.
shadbox	latex3	A tool to shade the background of any box – text, figure, table etc. – using Plain (LA)TEX.
shadethm	latex3	Package that allows declarations of the form `\newshadetheorem{thm}{Theorem}` or `\newshadetheorem{}[]{}` or `\newshadetheorem{}{}[]` to produce shaded boxes from the usual command `\begin{theorem}` ... `\end{theorem}`. The color package is required.
showlabels	latex3	Show label commands in the margin.
siam	generic3	Styles for SIAM publications
siggraph	latex3	Document class for formatting papers according to the specifications for submission to the annual ACM Siggraph conference
slidenotes	latex3	A class package for the easy production of a slide collection with annotations. Builds on the report style (or variants).
smallcap	latex3	Support for all 4 shapes of Small caps in DC1.3 where SC becomes a family, rather than a shape (`\scshape` is replaced by `\scfamily`). Thus you can write `\bf\scfamily\slshape` to get small caps bold slanted.
songbook	latex3	Package for typesetting song lyrics.
sparc-linux	systems1	System binaries for Sparc running Linux.
sparc-solaris2.4	systems1	System binaries for Sparc running Solaris 2.4.
sparc-solaris2.5	systems1	System binaries for Sun Sparc running Solaris 2.5.
sparc-sunos4.1.3	systems1	System binaries for Sparc running SunOS 4.1.3.
sprite	graphics3	Macros to set bitmaps with TEX
ssqquote	latex3	LATEX package and font definition file to access the 'cmssq' fonts, i.e. Computer Modern Sans Serif Quotation Style. The LATEX package also defines a `chapterquotes` environment as an example application.
startex	formats3	A TEX format designed to help students write short reports and essays. It provides the user with a suitable set of commands for such a task. It is also more robust than plain TEX and LATEX.
stmaryrd	fonts2	St Mary Road symbols for functional programming.
subeqn	latex3	Package for subequation numbering.
subeqnarray	latex3	Equation array with sub numbering.
subfigure	latex3	Figures divided into subfigures.
supertabular	latex3	A multi-page tables package.
swift	latex3	Miscellaneous macros by Matt Swift.
tap	plain3	An advanced table package.
taylor	graphics3	Diagram macros by Paul Taylor.
tbe	plain3	Examples from Arvind Borde's *TEX by Example*
tengwar	fonts3	Font for typesetting Tolkien Tengwar script, by Michael Urban

Catalogue of Packages *continued*

Package	*Collection*	*Description*
tex-ps	generic3	Various extra support file for dvips.
texdraw	graphics3	Graphical macros, using embedded PostScript.
texip	formats3	Macros from *TEX in Practice*
texlive	texlive1	Basic material for **TEX Live**.
text1	formats3	TEX format from the University of Washington
textcomp	latex3	Supports the Text Companion fonts which provide many text symbols (such as baht, bullet, copyright, musicalnote, onequarter, section, and yen) in the TS1 encoding.
textfit	latex3	Package to support fitting of text to a given width or height by scaling the font
textmerg	latex3	Merge text in TEX and LATEX. Useful, for example, in mail merge.
thesis	latex3	A class for producing a thesis based on the report class for a more European and more flexible look. Supports options like noindent, noitemization, headline, nocenter, crosshair, and chapterbib.
timesht	latex3	Package for typesetting time sheets.
tipa	fonts3	Fonts and macros for IPA phonetics characters.
tools	latex2	Standard LATEX 2ε tools, for extended tabular, verbatim and theorem support
tracking	latex3	Automatically adjust spaces between symbols in words or phrases to fit them into a specified length. Any chain of symbols (including spaces) in the current font may be treated.
treesvr	latex3	Tree macros.
treetex	plain3	Allows the automatic layout of n-ary trees with arbitrary node sizes in LATEX, using an external C program to do much of the hard work.
tugboat	generic2	Macros for TUGboat articles (plain and LATEX).
type1cm	latex3	A package that removes the restriction when using scalable versions of the cm fonts (Type1 Bakoma, or versions from BSR/Y&Y, or True Type versions from Kinch, PCTeX etc.) where LATEX restricts the cm fonts to discrete sizes.
typehtml	latex3	Typeset HTML (i.e., World Wide Web documents) directly from LATEX. Can handle almost all of HTML2, and most of the math fragment of the draft HTML3.
uaclasses	latex3	This package provides a LATEX 2ε document class named 'ua-thesis' for typesetting theses and dissertations in the official format required by the University of Arizona. Moreover, there is a fully compatible alternative document class 'my-thesis' for private "nice" copies of the dissertation, and the respective title pages are available as separate packages to work with "any" document class.
ucthesis	latex3	A modified version of the standard LATEX REPORT style that is accepted for use with University of California PhD dissertations and Masters theses.
ulsy	latex3	Extra mathematical characters
umlaute	latex3	An interface to inputenc for using alternate input encodings
umrand	fonts3	Package for page frames.
underlin	latex3	Package for underlining. Be advised that underlining is considered bad style in typesetting. See also ulem which is a specific package for LATEX.
useful	doc2	Useful documentation; various LATEX guides, FAQ, fontname docs, etc.
utthesis	latex3	Produces a thesis that meets the requirements of the Graduate School of The University of Texas at Austin :-)
uwthesis	latex3	University of Washington thesis
vdm	latex3	Typesetting VDM schemas
vector	latex3	Macros for more convenient representation of vectors in LATEX 2ε, both symbolically and as implicit or explicit rows/columns of elements
vertex	plain3	Styles for economics working papers and journals
vita	latex3	This class provides necessary macros to prepare your Curriculum Vitae or Resume.
vrb	latex3	Verbatim macros via plain TEX

Catalogue of Packages *continued*

Package	*Collection*	*Description*
vrsion	latex3	Defines a command which produces a version number in the .dvi-file when LaTeX is run.
wasy	fonts3	The wasy fonts (Waldis symbol fonts)
wasysym	latex2	Makes some additional characters available that come from the wasy fonts (Waldis symbol fonts). These fonts are not automatically included in NFSS2/LaTeX 2_ε since they take up important space and aren't necessary if one makes use of the packages amsfonts or amssymb. Symbols include: join, box, diamond, leadsto, sqsubset, lhd, rhd, apprle, ocircle, invneg, logof, varint, male, female, phone, clock, lightning, pointer, sun, bell, permil, smiley, various electrical symbols, shapes, music notes, circles, signs, astronomy, etc.
williams	latex3	Miscellaneous macros by Peter Williams.
win32	systems1	System binaries for Windows 32.
wnri	fonts3	METAFONT fonts for Old English, Indic languages in transcription, and American Indian languages.
wsuipa	fonts2	Washington State University IPA phonetic fonts
xymtex	latex3	Typesetting chemical structures.
xypic	graphics2	Sophisticated macros and fonts, originally designed for commutative diagrams, but with general applicability.
yhmath	latex3	Extended maths fonts for LaTeX.
youngtab	latex3	A package for typesetting Young-Tableaux mathematical symbols for the representations of groups, providing two macros, `\yng(#1)` and `\young(#1)` to generate the whole Young-Tableaux.
ytex	formats3	Macro package developed at MIT.
zed-csp	latex3	Typesetting Z and CSP format specifications

◇ Sebastian Rahtz
7 Stratfield Road
Oxford OX2 7BG
UK
s.rahtz@elsevier.co.uk

◇ Michel Goossens
CERN
CH-211 Geneva 23
Switzerland
m.goossens@cern.ch