LaTeX News, Issues 1–29

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LaTeX News

Issue 1, June 1994

Welcome to LaTeX News

An issue of *LaTeX News* will accompany every future release of LaTeX. It will tell you about important events, such as major bug fixes, newly available packages, or any other LaTeX news.

LaTeX 2_ε—the new LaTeX release

The most important news is the release of LaTeX 2_ε, the new version of the LaTeX software. This version has better support for fonts, graphics and colour, and will be actively maintained by the LaTeX3 project team. Upgrades will be issued every six months, in June and December.

Why a new LaTeX?

Over the years many extensions have been developed for LaTeX. This is, of course, a sure sign of its continuing popularity but it has had one unfortunate result: incompatible LaTeX formats came into use at different sites. Thus, to process documents from various places, a site maintainer was forced to keep LaTeX (with and without NFSS), SliTeX, $\mathcal{AMS}$-LaTeX, and so on. In addition, when looking at a source file it was not always clear for which format the document was written.

To put an end to this unsatisfactory situation a new release of LaTeX was produced. It brings all such extensions back under a single format and thus prevents the proliferation of mutually incompatible dialects of LaTeX 2.09. The new release was available for several months as a test version, and the final release of 1 June officially replaces the old version.

Processing documents with LaTeX 2_ε

Documents written for LaTeX 2.09 will still be read by LaTeX 2_ε. Any such document is run in *LaTeX 2.09 compatibility mode.*

Unfortunately, compatibility mode comes with a price: it can run up to 50% slower than LaTeX 2.09 did. If you want to run your document in the faster *native mode*, you should try replacing the line:

    \documentstyle[*options*,*packages*]{*class*}

with:

    \documentclass[*options*]{*class*}
    \usepackage{latexsym,*packages*}

Unfortunately, this will not always work, because some LaTeX 2.09 packages will only work in LaTeX 2_ε compatibility mode. You should find out if there is a LaTeX 2_ε version of the package available.

LaTeX 2_ε native mode also gives access to the new features of LaTeX 2_ε, described in *LaTeX 2_ε for authors.*

New packages

LaTeX 2_ε has much better support for graphics, colour, fonts, and multi-lingual typesetting. The following software should be available from the distributor who brought you LaTeX 2_ε:

babel, for typesetting in many languages.

color, for colour support.

graphics, for including images.

mfnfss, for using bitmap fonts.

psnfss, for using Type 1 fonts.

tools, other packages by the LaTeX3 team.

The packages come with full documentation, and are also described in *LaTeX: A Document Processing System* or *The LaTeX Companion.*

Further information

More information about LaTeX 2_ε is to be found in:

LaTeX: A Document Preparation System, Leslie Lamport, Addison Wesley, 2nd ed, 1994.

The LaTeX Companion, Goossens, Mittelbach and Samarin, Addison Wesley, 1994.

The LaTeX distribution comes with documentation on the new features of LaTeX:

LaTeX 2_ε for authors, describes the new features of LaTeX documents, in the file `usrguide.tex`.

LaTeX 2_ε for class and package writers, describes the new features of LaTeX classes and packages, in the file `clsguide.tex`.

LaTeX 2_ε font selection, describes the new features of LaTeX fonts for class and package writers, in the file `fntguide.tex`.

For more information on TeX and LaTeX, get in touch with your local TeX Users Group, or the international TeX Users Group, P. O. Box 869, Santa Barbara, CA 93102-0869, USA, Fax: +1 805 963 8358, EMail: tug@tug.org.

LaTeX News

Welcome to LaTeX News 2

An issue of *LaTeX News* will accompany every future release of LaTeX. It will tell you about important events, such as major bug fixes, newly available packages, or any other LaTeX news.

December 1994 release of LaTeX

December 1994 sees the second release of LaTeX 2ε. We are on schedule to deliver a release of LaTeX every six months, in December and June.

This release has seen quite a lot of activity, which is not too surprising as it's only been a year since the first test release of LaTeX 2ε. We don't expect so much activity in the next six months.

Many of the changes are minor improvements and bug-fixes—see *LaTeX 2ε for authors* (`usrguide.tex`), *LaTeX 2ε font selection* (`fntguide.tex`) and our change log (`changes.txt`) for more details.

However, there are two important new packages available for LaTeX: `inputenc` and AMS-LaTeX.

Accented input

One of the problems with writing non-English documents in LaTeX is the accent commands. Reading documents containing text like `na\"\i ve` is frustrating, especially if your keyboard allows you to type `naïve`.

In the past, LaTeX has not supported input containing accented characters such as `ï`, because Windows, Macintosh and Unix all have different ways of dealing with accented input, called *input encodings*.

However, the `inputenc` package allows you to specify which input encoding your document is written with, for example to use the ISO Latin-1 encoding, you type:

```
\usepackage[latin1]{inputenc}
```

At the moment, `inputenc` supports the `ascii` and `latin1` input encodings, but more will be added with future releases.

The `inputenc` package is currently a test release. The user interface for the full release will be upwardly compatible with the test version.

AMS-LaTeX

AMS-LaTeX is a set of miscellaneous extensions for LaTeX distributed by the American Mathematical Society. They provide superior information structure and superior printed output for mathematical documents.

There are far too many features of AMS-LaTeX to list here. AMS-LaTeX is described in the accompanying documentation, and in *The LaTeX Companion*.

Version 1.2beta of AMS-LaTeX was released for testing by intrepid users in October 1994. The full release of AMS-LaTeX 1.2 is expected in early January 1995.

It will be divided into two bundles:

- the `amsfonts` packages, which give access to hundreds of new mathematical symbols, and new math fonts such as blackboard bold and fraktur.
- the `amsmath` packages, which provide finer control over mathematical typesetting, such as multi-line subscripts, enhanced theorem and proof environments, and improved displayed equations,

For compatibility with older documents, an `amstex` package will be provided.

LaTeX on the internet

LaTeX has its own home page on the World Wide Web, with the URL:

```
http://www.tex.ac.uk/CTAN/latex/
```

This page describes LaTeX and the LaTeX3 project, and contains pointers to other LaTeX resources, such as the user guides, the TeX Frequently Asked Questions, and the LaTeX bugs database.

The electronic home of anything TeX-related is the Comprehensive TeX Archive Network (CTAN). This is a network of cooperating ftp sites, with over a gigabyte of TeX material:

```
ftp://ftp.tex.ac.uk/tex-archive/
ftp://ftp.shsu.edu/tex-archive/
ftp://ftp.dante.de/tex-archive/
```

For more information, see the LaTeX home page.

Further information

For more information on TeX and LaTeX, get in touch with your local TeX Users Group, or the international TeX Users Group, P. O. Box 869, Santa Barbara, CA 93102-0869, USA, Fax: +1 805 963 8358, EMail: tug@tug.org.

LATEX News

Issue 3, June 1995

Welcome to LATEX News 3

An issue of *LATEX News* will accompany every future release of LATEX. It will tell you about important events, such as major bug fixes, newly available packages, or any other LATEX news.

June 1995 release of LATEX

June 1995 sees the third release of LATEX 2_ε. We are on schedule to deliver a release of LATEX every six months, in December and June.

In the last *LATEX News*, we said "we don't expect so much activity in the next six months," which has turned out not to be true!

Additional input encodings

In the last release of LATEX we distributed a test version of the `inputenc` package which allows the use of input characters other than just a–z and A–Z. The package has proved to be robust, so we are now distributing an expanded version. The new release comes with a number of input encodings:

- `ascii` the standard encoding,
- `latin1` the ISO Western European alphabet,
- `latin2` the ISO Eastern European alphabet,
- `cp437` the IBM codepage 437,
- `cp850` the IBM codepage 850, and
- `applemac` the Apple Macintosh encoding.

These can be used by specifying an option to the `inputenc` package, for example:

```
\usepackage[latin1]{inputenc}
```

The new input encodings are currently being tested, but we don't expect any major changes.

LATEX getting smaller

In the past releases of LATEX 2_ε, the amount of memory LATEX requires has increased, but we are pleased to say that this trend has been reversed. We hope that future releases of LATEX will continue to get smaller.

For example, on this document, the December 1994 release used 52,622 words of memory, and the June 1995 release uses 51,216 words of memory, which is a 2.7% reduction.

We are currently experimenting with other ways of reducing the size of LATEX. For example, we are experimenting with an option to remove the `picture` and `tabbing` environments from the LATEX kernel, and to load them from a file the first time they are used. This should help LATEX to run on machines with limited memory. See `autoload.txt` for details.

Distribution and modification

One topic of discussion that has kept us busy is the distribution and modification conditions of LATEX. We are committed to keeping LATEX as free reliable software, and ensuring that (as far as possible) LATEX documents will produce the same results on all systems.

The modification conditions are currently under discussion, and we would like to hear from anyone interested. Please read `modguide.tex` for more information.

AMS-LATEX full release

The AMS-LATEX packages were still in beta test in the December 1994 release of LATEX, and the full release came out in January 1995.

AMS-LATEX is described in the *User's Guide* (`amsldoc.tex`) and in *The LATEX Companion*.

PostScript fonts

There is a new test release of the PSNFSS packages for accessing PostScript fonts in LATEX 2_ε. This includes an update to all of the fonts, to remove many of the underfull and overfull `\hbox` warnings, and improve the setting of non-English languages.

The new release of LATEX removes all of the 'hidden' uses of Computer Modern mathematics. For example, the footnote markers used to use math mode, so always used Computer Modern digits rather than ones from the current text font. This has now been fixed.

Further information

For more information on TEX and LATEX, get in touch with your local TEX Users Group, or the international TEX Users Group, P. O. Box 869, Santa Barbara, CA 93102-0869, USA, Fax: +1 805 963 8358, EMail: tug@tug.org.

The LATEX home page is `http://www.tex.ac.uk/ctan/latex/` and contains links to other WWW resources for LATEX.

LaTeX News

Issue 4, December 1995

Welcome to LaTeX News 4

An issue of *LaTeX News* will accompany every future release of LaTeX. It will tell you about important events, such as major bug fixes, newly available packages, or any other LaTeX news. This issue accompanies the fourth release of LaTeX 2_ε.

LaTeX getting smaller

The last release in June started a trend of LaTeX becoming smaller, we are pleased to announce that this has continued with this release. In particular the experimental 'autoload' version described in `autoload.txt` is much smaller as more parts of LaTeX are autoloaded.

New 'concurrent' docstrip

The time taken to 'unpack' this release from the documented sources should be much reduced (roughly half the time, depending on installation conditions). This is due to an improved version of the docstrip program that has been contributed by Marcin Woliński. This can write up to 16 files at once. The previous version could only write one file at a time which meant that it was very slow when producing many small files from the same source file as the source needed to be re-read for each file written.

New T1 encoded fonts

This year Jörg Knappen has completed a new release of the 'Cork' (T1) encoded Computer Modern fonts: the dc fonts release 1.2.

This release of the dc fonts fixes many bugs (including the missing `?'` (¿) and `!'` (¡) ligatures) and improves the fonts in many other ways. It is strongly recommended that you upgrade as soon as possible if currently you are using the old dc fonts, release 1.1 or earlier. The new fonts are available from the CTAN archives, in `tex-archive/fonts/dc`.

The names of the font files are *different*. This does not affect LaTeX documents but *does* affect the installation procedure as it assumes that you have the *new* fonts, and will write suitable 'fd' files for those fonts. If you have not yet upgraded your dc fonts then, after unpacking the distribution, you *must* `latex olddc.ins` to produce 'fd' files for the old dc fonts. This must be done *before* the format is made. Running the test document at `ltxcheck.tex` the end of

the installation will inform you if the wrong set of 'fd' files has been installed.

Note that this change does not affect the standard 'OT1' Computer Modern fonts that LaTeX uses by default.

More robust commands

The commands `\cite` and `\sqrt` are now robust.

Although most commands with optional arguments are fragile, as documented, such commands defined using the second optional argument of `\newcommand` and its derivatives are now *robust*.

New Interface to building 'extension' classes

The mechanism provided by `\DeclareOption`, `\ProcessOptions` and `\LoadClass` has proved to be a powerful and expressive means of defining one class in terms of another 'base' class. However there have been some requests to simplify the declaration of the common case where you want the 'base' class to be called with *all* the options that were specified to the extension class. This is now provided by the new command `\LoadClassWithOptions`. A similar command `\RequirePackageWithOptions` is provided for package use. More details of this feature are provided in `clsguide.tex` and `ltclass.dtx`.

More Input Encodings

The experimental `inputenc` package allows a more natural style of input of accented and other characters.

Three new input encodings are now supported.

- `ansinew` the Windows ansi encoding, as used in Microsoft Windows 3.x.
- `cp437de` a variant of `cp437`, which uses ß rather than β in the appropriate slot.
- `next` the encoding used on Next computers.

Further information

For more information on TeX and LaTeX, get in touch with your local TeX Users Group, or the international TeX Users Group, 1850 Union Street, #1637, San Francisco, CA 94123, USA, Fax: +1 415 982 8559, EMail: tug@tug.org. The LaTeX home page is `http://www.tex.ac.uk/ctan/latex/` and contains links to other WWW resources for LaTeX.

LaTeX News

Issue 5, June 1996

Welcome to LaTeX News 5

This issue of *LaTeX News* accompanies the fifth release of the new standard LaTeX, LaTeX 2_ε.

Extra possibilities for section headings

Most LaTeX sectioning commands are defined using `\@startsection`. For example, the article class defines:

```
\newcommand\section{\@startsection
 {section}{1}{0pt}{-3.5ex plus-1ex minus-.2ex}%
 {2.3ex plus.2ex}{\normalfont\Large\bfseries}}
```

The last argument specifies the style in which the section heading is to be typeset.

The new feature added at this release is that at the *end* of this argument you may specify a command that *takes an argument.* This command will be applied to the section number and heading. For example, one could use the `\MakeUppercase` command to produce uppercase headings. A package or class file could contain:

```
\renewcommand\section{\@startsection
 {section}{1}{0pt}{-3.5ex plus-1ex minus-.2ex}%
 {2.3ex plus.2ex}{\normalfont\Large\MakeUppercase}}
```

to produce section headings using uppercase medium weight text, rather than the bold text used by article. Note that, like the font choice, the uppercasing applies only to the actual heading (including any automatically generated section number), not to the text as it may appear in the running head or table of contents.

The 'openany' option in the 'book' class

The openany option allows chapter and similar openings to occur on left hand pages. Previously this option only affected `\chapter` and `\backmatter`. It now also affects `\part`, `\frontmatter` and `\mainmatter`.

More font (output) encodings

The font encoding name `T3` has been allocated to the encoding used in the new 256-character IPA fonts (for the phonetic alphabet) produced by Rei Fukui. His package, tipa, gives access to these fonts and should soon be available. (The encoding named `OT3` is the 128-character encoding used in the IPA fonts produced by Washington State University.)

More input encodings supported

The inputenc package now supports the IBM codepage 852 used in Eastern Europe, with the option `[cp852]` contributed by Petr Sojka.

Also, the inputenc package now activates most 'control codes' with ascii values below 32. Currently none of the encodings in the standard distribution makes use of these positions.

Fixes and improvements

The LaTeX kernel has only had minor changes, apart from `\@startsection` mentioned above. However, some small fixes have been incorporated removing the following problems:

- In tabular and array, previous versions of LaTeX 'lost' the inter-column space from an 'l'-column, when that column was completely empty.
- Previously, the use of the `\nofiles` command could change the *vertical spacing* in a document. A side effect of fixing this is that when `\nofiles` is used, `\label` puts a blank line in the log file.
- LaTeX often loads fonts 'on demand'. Previously, this could happen inside the argument of an accent command and this would cause the accent to appear in the wrong place.

Changes to the 'tools' packages

- The longtable package now uses a modified algorithm, contributed by David Kastrup, to align the 'chunks' of a table. It is now unnecessary to edit the document to add `\setlongtables` before the final run of LaTeX. In certain cases of overlapping `\multicolumn` entries, the new algorithm will produce better column widths than the old (at the price of extra passes through LaTeX).
- The dcolumn package now has the extra possibility of specifying the number of digits both *before* and after the 'decimal point'. This makes it easy to centre the column of numbers under a wide heading.

New copy of the LaTeX bug database

`http://www.tex.ac.uk/ctan/latex/bugs.html` will soon have links to a copy of the searchable LaTeX bugs database at Mainz (Germany) as well as the original copy at Sussex (England).

LaTeX News

Issue 6, December 1996

Welcome to LaTeX News 6

This issue of *LaTeX News* accompanies the sixth release of the new standard LaTeX, LaTeX 2_ε.

Mono-case file names

Previously LaTeX has used some files with 'mixed-case' file names such as `T1cmr.fd` and `T1enc.def`.

These file names cause problems on some systems (in particular they are illegal on the ISO 9660 CDROM format) and so in this release all file names have been made lowercase (for example `t1cmr.fd` and `t1enc.def`).

This change should *not* affect any document. Within LaTeX, encodings still have the usual uppercase names in uses such as `\usepackage[T1]{fontenc}` and `\fontencoding{T1}`. LaTeX will automatically convert to the lowercase form while constructing the file name. LaTeX will input the 'fd' file under the old name if it fails to find the file with the new name, so existing collections of fd files should still work with this new release.

The change *does* affect the configuration files that may be used to make the LaTeX format with initex. For example, the file `fonttext.ltx` previously specified `\input{T1cmr.fd}`. It now has `\input{t1cmr.fd}`. If you use a local file `fonttext.cfg` you will need to make similar changes, as `\input{T1cmr.fd}` will not work as `T1cmr.fd` is no longer in the distribution.

The files affected by this change all have names of the form `*.fd` or `*enc.def`.

Another input encoding

Thanks to work by Søren Sandmann, the `inputenc` package now supports the IBM codepage 865 used in Scandinavia.

Better user-defined math display environments

Suppose that you want to define an environment for displaying text that is numbered as an equation. A straightforward way to do this is as follows:

```
\newenvironment{texteqn}
  {\begin{equation}
    \begin{minipage}{0.9\linewidth}}
   {\end{minipage}
  \end{equation}}
```

However, if you have tried this then you will probably have noticed that it does not work perfectly when used in the middle of a paragraph because an inter-word space appears at the beginning of the first line after the environment.

There is now an extra command (with a very long name) available that you can use to avoid this problem; it should be inserted as shown here:

```
\newenvironment{texteqn}
  {\begin{equation}
    \begin{minipage}{0.9\linewidth}}
   {\end{minipage}
  \end{equation}
  \ignorespacesafterend}
```

Docstrip improvements

The `docstrip` program that is used to unpack the LaTeX sources has undergone further development. The new version should be able to process all old 'batchfiles' but it allows a simpler syntax in new 'batchfiles' (no need to define `\def\batchfile{...}`).

It also allows 'target' directories to be specified when writing files. This directory support is disabled by default unless activated in a local `docstrip.cfg` configuration file. See `docstrip.dtx` for details.

AMS LaTeX update

Since the last LaTeX release in June, the American Mathematical Society have re-issued the 'AMSLaTeX' classes and packages, fixing several reported problems.

Graphics package update

The LaTeX color and graphics packages have been updated slightly, principally to support more dvi drivers, see the readme file in the `graphics` distribution.

EC Fonts released

The first release of the Extended Computer Modern fonts has just been made. (In January 1997.)

This release of LaTeX does *not* default to these 'ec' fonts as its T1 encoded fonts. By default it will use the 'dc' fonts if the T1 encoding is requested.

As noted in `install.txt` you may run TeX on the install file `ec.ins` *after* unpacking the base distribution but *before* making the LaTeX format. This will produce suitable 'fd' files making LaTeX (including, for the first time, the `slides` class) use the 'ec' fonts as the default T1 encoded font set.

LaTeX News

Issue 7, June 1997

T1 encoded Computer Modern fonts

As in the last release the base LaTeX distribution contains three different sets of 'fd' files for T1 encoded fonts.

In this release the default installation uses `ec.ins` and so installs files suitable for the current 'EC fonts' distribution. If you have still not updated to the EC fonts and are using the earlier test versions, known as DC then you should unpack `newdc.ins` (for DC release 1.2 or later) or `olddc.ins` (for the original releases of the DC fonts). This should be done after unpacking `unpack.ins` but before making the format by running iniTeX on `latex.ltx`. There are further details in `install.txt`.

T1 encoded Concrete fonts

The Metafont sources for T1 encoded 'Concrete' fonts have been removed from the mfnss distribution as they were based on the now obsolete DC fonts release 1.1. Similarly the `cmextra.ins` install file in the base distribution no longer generates fd files for the 'Concrete' fonts. To use these fonts in either T1 or OT1 encoding it is recommended that you obtain Walter Schmidt's ccfonts package and fonts from CTAN `macros/latex/contrib/supported/ccfonts`.

Further input encodings

Two more inputenc packages have been added: for latin5, thanks to H. Turgut Uyar; and for latin3, thanks to Jörg Knappen.

Normalising spacing after punctuation

The command `\normalsfcodes` was introduced at the last patch release. This is normally given the correct definition automatically and so need not be explicitly set. It is used to correct a problem, reported by Donald Arseneau, that punctuation in page headers has always (in all known TeX formats) been potentially incorrect if the page break happens while a local setting of the space codes (for instance by the command `\frenchspacing`) is in effect. A common example of this happening in LaTeX is in the verbatim environment.

Accessing Bold Math Symbols

The tools distribution contains a new package, `bm`, which defines a command `\bm` that allows individual bold symbols to be accessed within a math expression (in contrast to `\boldmath` which makes whole math expressions default to bold fonts). It is more general than the existing amsbsy package; however, to ease the translation of documents between these two packages, `bm` makes `\boldsymbol` an alias for `\bm`.

This package was previously made available from the 'contrib' area of the CTAN archives, and as part of Y&Y's LaTeX support for the MathTime fonts.

Policy on standard classes

Many of the problem reports we receive concerning the standard classes are not concerned with bugs but are suggesting, more or less politely, that the design decisions embodied in them are 'not optimal' and asking us to modify them.

There are several reasons why we have decided not to make such changes to these files.

- However misguided, the current behaviour is clearly what was intended when these classes were designed.
- It is not good practice to change such aspects of 'standard classes' because many people will be relying on them.

We have therefore decided not to even consider making such modifications, nor to spend time justifying that decision. This does not mean that we do not agree that there are many deficiencies in the design of these classes, but we have many tasks with higher priority than continually explaining why the standard classes for LaTeX cannot be changed.

We would, of course, welcome the production of better classes, or of packages that can be used to enhance these classes.

New addresses for TUG

For information about joining the TeX Users Group, and about lots of other LaTeX-related matters, please contact them at their new address:

> TeX Users Group, P.O. Box 1239,
> Three Rivers, CA 93271-1239, USA
> Fax: +1 209 561 4584
> E-mail: `tug@mail.tug.org`
> URL: `http://www.tug.org/`

LaTeX News

Issue 8, December 1997

New supported font encodings

Two new font encodings are supported as options to the `fontenc` package:

OT4 This is a seven-bit encoding designed for Polish. The LaTeX support was developed by Mariusz Olko.

TS1 This is the 'Text Companion Encoding'; it contains symbols designed to be used in text, as opposed to mathematical formulas, and some accents designed for uppercase letters. It is currently supported by the 'tc' fonts, which match the T1 encoded 'ec' text fonts. A subset of the glyphs in this encoding is supported by virtual fonts distributed with the PostScript font metrics on the CTAN archives. (This is the '8c' encoding in Karl Berry's fontname scheme.) The `textcomp` package provides access to this encoding but here is a warning to current users of that package: some of the internal names for the characters have changed.

New input encodings

These additions to the `inputenc` package are `decmulti` (the DEC Multinational Character Set, contributed by M. Y. Chartoire) and `cp1250` (an MS-Windows encoding for Central and Eastern Europe, contributed by Marcin Woliński). There is also a `cp1252` encoding that is identical to `ansinew`.

Tools

The `calc` package (used in many examples in *The LaTeX Companion*) has been contributed to this distribution by Kresten Krab Thorup and Frank Jensen. This is essentially the same as the version that has been available from the CTAN archives for some time, with one minor change: to use LaTeX-style error messages. It enables the use of arithmetic expressions within arguments to standard LaTeX commands where a length or a counter value is required. For example:

```
\setcounter {page} { \value{page} * 2 + 1 }
\parbox { 3in - ( 2mm + \textwidth / 9 ) }
```

There have also been some improvements to several other packages in this collection. In particular, `bm` now works correctly with constructions such as `\bm{f'}` involving ' or other characters which use TeX's special "`\mathcode"8000`" feature. Also, `multicol` sets the length `\columnwidth` to an appropriate value; this enables it to work with classes that support two-column setting, e.g., the AMS classes.

Graphics

The special `oztex.def` driver file has been removed, and OzTeX support has been merged with dvips, following advice from Andrew Trevorrow about OzTeX 3.x.

The `keyval` package has had some internal improvements: to use LaTeX format error messages; and to avoid '`#` doubling'. This latter change means that the `command` key for the `graphicx` version of `\includegraphics` should now be used with one `#` rather than two. For example, `command = 'gunzip #1`. Fortunately this key is almost never used in practice, so few if any documents should be affected by this change.

LaTeX3 experimental programming conventions

As announced at the TeX Users Group meeting (Summer 1997), a group of highly experimental packages will soon be released to allow experienced TeX programmers to experiment with, and comment on, a proposed set of syntax conventions and basic data-types that might form the basis for programming large scale projects in TeX. They will be located in this CTAN directory:

```
CTAN:macros/latex/packages/expl3
```

The documentation of this material is as follows: individual package files provide outline, draft documentation; there is an article that gives an overview of the syntax and related concepts; there is a `readme.txt` file containing a brief description of the collection.

All aspects of these packages are liable, indeed likely, to change. They should not be used at this stage for anything that requires a stable system. However, we do encourage people to experiment with these packages, and to send comments on them to the `LaTeX-L` mailing list. To subscribe to this list, mail to:

```
listserv@urz.uni-heidelberg.de
```

the following one line message:

```
subscribe LATEX-L <first-name> <second-name>
```

LaTeX News

Issue 9, June 1998

New math font encodings

A joint working group of the TeX Users Group and the
LaTeX3 Project is developing a new 8-bit math font
encoding for TeX. It is designed to overcome several
limitations and implementation problems of the old
math font encodings and to simplify switching between
different sets of math fonts, much as the LaTeX font
selection interface has simplified switching between text
fonts.

Since the work on this project relies entirely on
volunteer work, we cannot give a specific release date
yet. However, a prototype implementation already
exists. This contains several sets of virtual fonts, some
LaTeX packages and a kernel module; we hope to
integrate it into the main LaTeX distribution for the
next release.

Documents using only standard LaTeX commands for
math symbols should not be affected by switching to
the new math font encodings However, documents,
classes or packages making specific assumptions about
the encoding of math symbol fonts are likely to break.

Further information about the Math Font Group
may be found on the World Wide Web at
`http://www.tug.org/twg/mfg/`.

A new math accent

A new math accent, `\mathring`, has been added. This
is a math mode version of the ring accent (˚) which is
available in text mode with the command `\r`.

Extended `\DeclareMathDelimiter`

The command `\DeclareMathDelimiter` has been
extended. Normally this command takes six arguments.
Previously, when being used to declare a character
(such as [) as a delimiter, a variant form was used with
only five arguments. The argument specifying the
default 'math class' was omitted. Now the full
six-argument form may be used in this case. The extra
information is used to implicitly declare the character
via `\DeclareMathSymbol` for use when the symbol is
not used with `\left` or `\right`.

The old five-argument form is detected and will work
as before.

Tools distribution

The `multicol` package now supports the production of
multiple columns without balancing the last page. To
get this effect use the `multicols*` environment.

The `layout` package was partly recoded by Hideo
Umeki to display page layout effects in a better way.

As suggested by Donald Arseneau, the `calc` package
was extended to support the new commands
`\widthof{`*text*`}`, `\heightof{`*text*`}`, and `\depthof{`*text*`}`
within a `calc`-expression. At the same time we
modified a few kernel commands so that
`calc`-expressions can now be used in various useful
places such as the dimension arguments to the `tabular`
environment and the `\rule` command. For many other
standard LaTeX commands this was already possible.

Support for Cyrillic encodings

We are very pleased that, after a lengthy period of
development, a set of fonts, encodings and support files
for using LaTeX with Cyrillic characters will soon be
available.

Test versions of the 'LH' fonts for these Cyrillic
encodings, based on the Computer Modern design, are
available from CTAN archives in the directory
`fonts/cyrillic/lh-test`. The LaTeX support files (by
Werner Lemberg and Vladimir Volovich) are also
available from CTAN archives in
`macros/latex/contrib/supported/t2`

Default docstrip header

Many LaTeX users now distribute packages in
documented source form using the `docstrip` system.
Docstrip allows a header to be placed on generated
package files, suitable for giving copyright information,
or distribution conditions.

We have changed the default version of this header so
that it allows stripped files to be distributed in
ready-to-run installations such as the TeXLive CD. If
you use the default header for distributing your files you
should check that the new copyright text is acceptable
to you. The file `docstrip.dtx` explains how to produce
your own header if you wish to do so.

LATEX News

Issue 10, December 1998

Five years of LATEX 2ε

Since this is the 10th edition of LATEX News, the (no longer) New Standard LATEX must have hit the streets almost this long ago. In fact it was only the beta-version that some people got just in time for Christmas 1993, and since then there has been a lot of tidying-up and smoothing of rough edges (not to mention a few bug fixes!).

Maybe it is time for something more radically different to emerge and be hungrily adopted by the world; but don't panic, we shall be maintaining what you have now for a long time yet. Amongst the more polite things that have been written about our efforts, we found that this quote (somewhat censored to protect the guilty) well reflects some of our feelings about working on LATEX over the years: *the mere existence of LATEX 2ε is a great miracle.*

Restructuring the LATEX distribution

Since the (once) 'new' standard LATEX has reached such a venerable age, we are reviewing the way in which the system is presented to the world.

An early intention is to define, given the wide variety of good packages now available, what now constitutes a useful installation of LATEX. We also hope that such a definition will help document portability if it leads to a future in which a LATEX class designer can reasonably assume that a known list of facilities will be there for all users (so that each class need not supply them).

As a first small step towards this definition, we shall replace the `latex/packages` subdirectory on CTAN. This directory was a curious mixture of the important, such as the LATEX `tools`, that any self-respecting LATEX installation ought to have, and the esoteric or experimental.

The esoterica from `packages` will be moved to new locations, as follows:

```
expl3   to latex/exptl/project
mfnfss  to latex/contrib/supported/mfnfss
```

The subdirectory that replaces `packages` will be called `latex/required`; all the other sub-directories of `packages` will be moved there.

LATEX Project on the Internet

A new `latex-project.org` domain has been registered. The web site is not yet fully functional but the old LATEX pages from CTAN are available at `http://www.latex-project.org/` and the LATEX bug reporting address has been changed to `latex-bugs@latex-project.org`.

Restructuring the LATEX package licenses

Several people have requested an easy mechanism for the distribution of LATEX packages and other software "under the same conditions as LATEX". The old `legal.txt` file was unsuitable as a general licence as it referred to specific LATEX authors, and to specific files.

Therefore, in this release `legal.txt` contains just the copyright notice and a reference to the new *LATEX Project Public License* (LPPL) for the distribution and modification conditions. The `tools`, `graphics`, and `mfnfss` packages also now refer to this license in their distribution notices.

Support for Cyrillic encodings

Basic Cyrillic support, as announced in LATEX News 9, is now finally an official part of LATEX. It includes support for the following standard Cyrillic font encodings (this list may grow): T2A T2B T2C X2.

It also includes various Cyrillic input encodings (20 in total, including commonly used variants and Mongolian Cyrillic encodings). This provides platform independent and sophisticated basic support for high-quality typesetting in various Cyrillic-based languages.

For further information see the file `cyrguide.tex`.

Tools distribution

The `varioref` package has been extended to support textual page references to a range of objects: e.g., if `eq-first` and `eq-last` are the label names for the first and last equation in a sequence, then you can now write

```
see~\vrefrange{eq-first}{eq-last}
```

This results in different text depending on whether both labels fall on the same page.

Some additional user commands, as well as building-blocks for writing private extensions, are described in the accompanying documentation.

LaTeX News

Issue 11, June 1999

Back in sync

The last release of LaTeX was delayed even longer than you have come to expect. We hope that it proved worth waiting for. It required a major integration of the code from several people and, independently, the introduction of the LPPL (see LaTeX News 10) plus several related changes to our internal systems. It therefore seemed sensible to wait until everything was complete rather than do things in too much hurry.

This seem to have been a successful strategy as the recent patch release was related to an isolated change that was done many months previously. If this release does not appear a lot closer to its nominal date then ... well, you will not be reading this sentence!

Yearly release cycles

With the year 2000 rapidly approaching, we intend to switch to a release frequency of just one per year (with patches if necessary) for the core of LaTeX 2_ε. These days the system is sufficiently stable that the original update policy is costing everybody more time than is now warranted.

LPPL update

Thanks to extensive and valuable input from Matt Swift (`swift@alum.mit.edu`) we now have a clearer and more detailed form of the LaTeX Project Public Licence. This release contains both the original version (in `lppl-1-0.txt`) and the updated version, LPPL 1.1.

The future of SliTeX

We still get a very small trickle of reports about this part of the system (if you are no longer able to recall LaTeX 2.09 then you will know it as the `slides` class). We have not classified them (in our minds at least) as bugs since we have always known that there are many problems with this class. It is clear to us that the only sensible action would be to redesign the system completely; in particular, to remove much of its complexity whose purpose is to support 10-year-old overlay technology. However, this would take a lot too much time and would be completely out of proportion to its current usage.

We are therefore planning to make the `slides` class unsupported in the sense that any problem related to the use of invisible fonts is considered to be a feature (The LaTeX 2_ε manual by Leslie Lamport doesn't even describe this part of the class any more). Of course, if it still has its enthusiasts then we are happy to cede it to their loving care (somewhat like a preserved steam locomotive, in some parts of the world).

Fontenc package peculiarities

The `\usepackage` interface normally ensures that a package is loaded only once. The fontenc package has become an exception to this rule: it can be loaded several times using different options, e.g., allowing the user to add a font encoding in the preamble. This comes at a price for package writers: the low-level commands (see `ltclass.dtx`) used to check if a package was loaded, and with which options, do not work for the fontenc package.

New math font encodings

As we announced in LaTeX News 9, a joint working group of the TeX Users Group and the LaTeX3 Project has developed a new 8-bit math font encoding for TeX. The reason why this work is not yet released is because of other exciting developments in the world of math fonts and math characters. It is obviously wise to ensure that the encoding work is fully integrated with the available fonts.

Those interested are reminded that further information about the Math Font Group may be found on the World Wide Web at: http://www.tug.org/twg/mfg/.

Tools distribution

The multicol package has now got a small but useful extension which allows you to force a column break where this is really necessary. This is done with the command `\columnbreak`, which can be used like `\pagebreak` (e.g., within paragraphs) except that it cannot have an optional argument and thus it always forces a new column.

Coming soon

Major work on a new class file structure to support flexible designs is well under way; some of this work will be presented at the TUG'99 conference in Vancouver, Canada. With a bit of luck much of this work could be ready for integration into the next release—so watch this space!

LaTeX News

Issue 12, December 1999

LPPL update

Since the release of the LaTeX Project Public Licence version 1.1, we have received a small number of queries which resulted in some minor changes to improve the wording or explain the intentions better. As a consequence this release now contains LPPL 1.2 in the file `lppl.txt` and the previous versions as `lppl-1-0.txt` and `lppl-1-1.txt`.

fixltx2e package

This package provides fixes to LaTeX 2_ε which are desirable but cannot be integrated into the LaTeX 2_ε kernel directly as they would produce a version incompatible to earlier releases (either in formatting or functionality).

By having these fixes in the form of a package, users can benefit from them without the danger that their documents will fail, or produce unexpected results, at other sites; this works because a document will contain a clear indication (the `\usepackage` line, preferably with a required date) that at least some of these fixes are required to format it.

Outcome of TUG '99 (Vancouver)

The slides from the TUG'99 presentation we gave on *a new interface for LaTeX class designers* are available from the LaTeX Project website; look for the file `tug99.pdf` at:

http://www.latex-project.org/talks/

Please note that this document was intended only to be informal "speaker's notes" for our own use. We decided to make them available (the speaker's notes as well as the slides that were presented) because several people requested copies after the talk. However, they are *not* in a polished copy-edited form and are not intended for publication.

Prototype implementations of parts of this interface are now available from:

http://www.latex-project.org/code/experimental/

We are continuing to add new material at this location so as to stimulate further discussion of the underlying concepts. As of December 1, 1999 the following parts can be downloaded.

xparse Prototype implementation of the interface for declaring document command syntax. See the `.dtx` files for documentation.

template Prototype implementation of the template interface (needs parts of `xparse`).

The file `template.dtx` in that directory has a large section of documentation at the front describing the commands in the interface and giving a 'worked example' building up some templates for caption formatting.

xcontents Interface description for table of contents data (no code yet). Coding examples have been thoroughly discussed on the `latex-l` list.

xfootnote Working examples for generating footnotes, etc. Needs `xparse` and `template`.

All examples are organised in subdirectories and additionally available as `gzip tar` files.

Please remember that this material is intended only for experimentation and comments; thus any aspect of it, e.g., the user interface or the functionality, may change and, in fact, is very likely to change. For this reason it is explicitly forbidden to place this material on CD-ROM distributions or public servers.

These concepts, as well as their implementation, are under discussion on the list `LATEX-L`. You can join this list, which is intended solely for discussing ideas and concepts for future versions of LaTeX, by sending mail to `listserv@URZ.UNI-HEIDELBERG.DE` containing the line

    SUBSCRIBE LATEX-L *Your Name*

This list is archived and, after subscription, you can retrieve older posts to it by sending mail to the above address, containing a command such as:

    GET LATEX-L LOGyymm

where `yy`=Year and `mm`=Month, e.g.

    GET LATEX-L LOG9910

for all messages sent in October 1999.

LATEX News

Issue 13, June 2000

Yearly release cycle

We announced in *LATEX News 11* that we intended to switch to a 12-monthly release schedule. With the present (June 2000) release, this switch is being made: thus the next release of LATEX will be dated June 2001. We shall of course continue, as in the past, to release patches as needed to fix significant bugs.

PSNFSS: *Quote of the Month*

> You should say in the LATEX News that Walter Schmidt has taken over PSNFSS from me. It gives me a certain pleasure to be able to draw a line under that part of my life. . .
>
> Sebastian Rahtz

The PSNFSS material, which supports the use of common PostScript fonts with LATEX, has been thoroughly updated. Most noticeably, the `mathpple` package, which used to be distributed separately, is now part of the basic PSNFSS bundle; this package provides mathematical typesetting with the Palatino typeface family. In addition, numerous bugs and flaws have been fixed and the distribution has been 'cleaned up'. The file `changes.txt` contains a detailed list of these changes.

The documentation (in `psnfss2e.pdf`) has been completely rewritten to provide a comprehensive introduction to the use of PostScript fonts.

Notice that the new PSNFSS needs updated files for font metrics, virtual fonts and font definitions. If you received the new version (8.1) as part of a complete TEX system then these new font files should also have been installed. However, if you intend to install or update PSNFSS yourself, please read the instructions in the file `00readme.txt` of the new PSNFSS distribution.

Support for commercial PostScript fonts, such as Lucida Bright, has been removed from the basic distribution; it is now available from CTAN: `http://mirror.ctan.org/macros/latex/contrib/supported/psnfssx`.

New AMS-LATEX

Version 2.0 of AMS-LATEX was released on December 1, 1999. It can be obtained via `ftp://ftp.ams.org/pub/tex/` or `http://www.ams.org/tex/amslatex.html`, as well from CTAN: `http://mirror.ctan.org/macros/latex/required/amslatex`.

This release consists chiefly of bug fixes and consolidation of the existing features. The division of AMS-LATEX into two main parts (the math packages; the AMS document classes) has been made more pronounced. The files `diffs-m.txt`, `diffs-c.txt`, `amsmath.faq`, and `amsclass.faq` describe the changes and address some common questions.

The primary documentation files remain `amsldoc.tex`, for the amsmath package, and `instr-l.tex`, for the AMS document classes. The documentation for the amsthm package, however, has been moved from `amsldoc.tex` to a separate document `amsthdoc.tex`.

New input encoding latin4

The package inputenc has, thanks to Hana Skoumalová, been extended to cover the latin4 input encoding; this covers Baltic and Scandinavian languages as well as Greenland Inuit and Lappish.

New experimental code

In *LATEX News 12* we announced some ongoing work towards a 'Designer Interface for LATEX' and we presented some early results thereof. Since then, at Gutenberg 2000 in Toulouse and TUG 2000 in Oxford, we described a new output routine and an improved method of handling vertical mode material between paragraphs. In combination these support higher quality *automated*[1] page-breaking and page make-up for complex pages—the best yet achieved with TEX!

A paper describing the new output routine is at `http://www.latex-project.org/papers/xo-pfloat.pdf` All code examples and documentation are available at `http://www.latex-project.org/code/experimental/`

This directory has been extended to contain

galley Prototype implementation of the interface for manipulating vertical material in galleys.

xinitials Prototype implementation of the interface for paragraph initials (needs the `galley` package.

xtheorem Contributed example using the `template` package to provide a designer interface for theorem environments.

xoutput A prototype implementation of the new output routine as described in the `xo-pfloat.pdf` paper. Expected availability: at or shortly after the TUG 2000 conference.

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[1] The stress here is on automated!

LaTeX News

Issue 14, June 2001

Future releases

We are currently exploring how to best support the very large community of individuals, organisations and enterprises that depend on the robustness and availability of the current standard LaTeX distribution. The results of this may lead to some changes in the regular release schedule and the handling of bug reports during the next year.

New release of Babel (required)

Earlier this year a new release of Babel (3.7) became available. You can read about its new features in

`http://www.ctan.org/tex-archive/macros/`
        `latex/required/babel/announce.txt`

One of the bugs that got fixed in this release deals with how labels are handled by LaTeX. Because this part of the kernel is modified by babel, the relevant changes need to be coordinated. Therefore to use Babel with this release of LaTeX you will need to update your version of babel to at least 3.7.

New input encoding latin9

The package inputenc has, thanks to Karsten Tinnefeld, been extended to cover the latin9 input encoding. The ISO-Latin 9 encoding is a useful modern replacement for ISO-Latin 1 that contains a few characters needed for French and Finnish. Of wider interest, it also contains the euro currency sign; this could be the killer argument for many 8-bit texts to use Latin-9 in the future.

According to a Linux manpage, ISO Latin-9 supports Albanian, Basque, Breton, Catalan, Danish, Dutch, English, Estonian, Faroese, Finnish, French, Frisian, Galician, German, Greenlandic, Icelandic, Irish Gaelic, Italian, Latin, Luxembourgish, Norwegian, Portuguese, Rhaeto-Romanic, Scottish Gaelic, Spanish and Swedish. The characters added in latin9 are (in LaTeX notation):

  `\texteuro \v S \v s \v Z \v z \OE \oe \" Y`

They displace the following characters from latin1:

  `\textcurrency \textbrokenbar \"{} \'{} \c{}`
  `\textonequarter \textonehalf \textthreequarters`

New tools

The new package trace provides many commands to control LaTeX's tracing and debugging output, including the excellent new information available with ε-TeX such as the extremely useful tracing of local assignments. You will find it in the tools distribution.

It offers the command `\traceon`, which is similar to `\tracingall` but suppresses uninteresting stuff such as font loading by NFSS (which can go on for pages if you are unlucky). It also offers `\traceoff` to ... guess what! Full details are in the documented source file, `trace.dtx`.

In the base ifthen package we have added the uppercase synonyms `\NOT \AND` and `\OR`.

New experimental code

In *LaTeX News 12* we announced some ongoing work towards a 'Designer Interface for LaTeX' and we presented some early results thereof. Since then, at Gutenberg 2000 in Toulouse and TUG 2000 in Oxford, we described a new output routine and an improved method of handling vertical mode material between paragraphs. In combination these support higher quality *automated*[1] page-breaking and page make-up for complex pages—the best yet achieved with TeX!

More recently we have added material to handle the complex front matter requirements of journal articles; this was presented at Gutenberg 2001 in Metz.

A paper describing the new output routine is at `http://www.latex-project.org/papers/xo-pfloat.pdf` All code examples and documentation are available at `http://www.latex-project.org/code/experimental` This directory has been extended to contain the following.

galley Prototype implementation of the interface for manipulating vertical material in galleys.

xinitials Prototype implementation of the interface for paragraph initials (needs the `galley` package).

xtheorem Contributed example using the `template` package to provide a designer interface for theorem environments.

xor A prototype implementation of the new output routine as described in the `xo-pfloat.pdf` paper.

xfrontm A prototype version of the new font matter interface.

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[1]The stress here is on automated!

LaTeX News

Issue 15, December 2003

Anniversary release

Yes, it's now 10 years since the first release in this series and, for Knuthists, this release also contains *Issue 16* !

Meanwhile this *Issue 15* describes the major new features in the current release whilst *Issue 16* looks a little way into the future of LaTeX.

LPPL – new version

Most importantly, there is now a new version, 1.3, of the LaTeX Project Public Licence. Many of you will be thrilled to know that, following the exchange of over 1600 e-mail messages dissecting various aspects of its philosophy such as 'how many angels can appear in the name of a file before it becomes non-free', this version is now officially a DFSG (Debian Free Software Guidelines) approved license. The discussions start at http://lists.debian.org/debian-legal/2002/debian-legal-200207/threads.html with high traffic throughout August to October 2002 and further heated discussions starting in April 2003 and concluding around June at http://lists.debian.org/debian-legal/2003/debian-legal-200306/msg00206.html.

The important features of the new version are useful clarifications in the wording, and revised procedures for making a change to the Current Maintainer of a package. Special thanks to all those people from Debian Legal who worked constructively with us on this onerous task, especially but not exclusively Jeff Licquia and Branden Robinson.

Small updates to varioref

The English has been corrected in `\reftextbefore` (an incompatible change). There are other extensions such as `\labelformat`, `\Ref`, `\Vref` and `\vpagerefnum`. Some Dutch text has also been changed and two new options added: slovak and slovene.

New and more robust commands

Many of the math mode commands for compound symbols have been made robust and a new robust command has been added: `\nobreakdashes`. This last is a low-level command, borrowed from the amsmath package, for use only before hyphens or dashes. It prevents the line break that is normally allowed after the following sequence of dashes.

Fixing font sizes

The new fix-cm package, by Walter Schmidt, changes the CM font definition (`.fd`) files so that similar design sizes are used in both the OT1 and T1 encodings.

Font encodings

A number of options have been added to the textcomp package, enabling only available glyphs to be used. Also, the 'NFSS font families' are now divided into five different groups according to the subset of glyphs each provides from the full collection of symbols in the TS1 encoding. Given sufficient information about a font family textcomp will use this in order to limit the typesetting to those glyphs that are available.

Use of this mechanism has also enhanced `\oldstylenums` to use the current font if possible.

Displaying font tables

With the nfssfont package you can now specify the font to display by giving its 'NFSS classification', rather than needing to know its external font file's name. It is also now possible to generate large collections of font tables in batch mode by providing a suitable input file.

New input encodings

The inputenc package has been extended as follows: macce input encoding (Apple Central European), thanks to Radek Tryc and Marcin Wolinski; cp1257 for Baltic languages; latin10, thanks to Ionel Ciobîcă. The euro symbol has by now been added to several encodings: ansinew, cp1250 and cp1252 (which also has another addition), whilst cp858 adds it to cp850.

Unicode input

Partial, experimental support for text files that use the Unicode encoding form UTF-8 is now provided by the option utf8 for the inputenc package.

The only Unicode text file characters supported by the current version are those based on the most common inputs for glyphs from the small collection of standard LaTeX Latin encodings.

And finally . . . pict2e

The old, non-functional version of this package has been removed as there is now a fully working version from Hubert Gäßlein and Rolf Niepraschk. It is described in *The LaTeX Manual.*

LaTeX News

Issue 16, December 2003

Anniversary news

This anniversary *Issue 16* takes a brief look into the future work of the LaTeX3 Project Team, both short and and longer range. Please let us know if you want to get involved with us in any of this work (see below).

An overview of the 10th Anniversary Release, dated 2003/12/01, is can be found in *Issue 15*.

TLC2: The LaTeX Companion – 2nd edition!

Since you are reading this newsletter, there is a good chance that you, or a friend, has already bought this encyclopedic volume: the incomparable Second Edition of this work that is every LaTeXie's ultimate lucky charm.

If by some chance you have not yet purchased your own copy then get into training, get shopping, and get flexing your muscles (both physical—it's 1100+ pages, and intellectual) by using it to discover masses of invaluable 'insider information' about:

- the latest release of Standard LaTeX;
- over 200 extension packages;
- plus related software and systems.

For more information on this all new (??...OK, not *all*, but over 90%!!), all accurate (we hope!) 10th Anniversary Edition, check out <http://www.awprofessional.com/titles/0201362996>.

Future maintenance

We are currently exploring how best to support the very large and rapidly growing community of individuals, organisations and enterprises that depend on the robustness and availability of the current standard LaTeX distribution. Although we remain firmly resolved not to make changes in the base distribution (the kernel) of Standard LaTeX, there is still much that needs doing to maintain its reliability and utility and to keep up the necessary level of communication with users and supporters. Also, as with all advanced software systems, bugs are still turning up occasionally so some fixes are still essential.

One major impediment to providing adequate service levels in this area is, of course, the difficulties inherent in obtaining the time and commitment of skilled minds—hence the appeal above to anyone interested in getting involved.

LPPL certification

There are still some outstanding diplomatic tasks around the LaTeX Project Public Licence: these include e.g., getting it 'OSF certified' and ensuring that it gains more support and wider use, even in the FSF world where it has long been tolerated.

Use of ε-TeX/pdfTeX

We expect that within the next two years, releases of LaTeX will change modestly in order to run best under an extended TeX engine that contains the ε-TeX primitives, e.g., ε-TeX or pdfTeX. The details of this possible upgrade need further work so we are not making a definite announcement yet.

Although the current release does not *require* ε-TeX features, we certainly recommend using an extended TeX, especially if you need to debug macros.

End of 'autoload' support

As computer systems generally grow in capacity, requirements change and so we believe that the `autoload` variant of LaTeX is no longer required. Thus, although the code remains it is no longer supported. We hope this does not cause any problems.

New models, new code

In the period 1999–2001 we published many results of our work over the previous decade on the development of new concepts and models for automated typesetting based on TeX as the underlying platform. These can be found at <http://www.latex-project.org/papers/> and <http://www.latex-project.org/code/experimental/>.

Since then a very large proportion of the The Team's efforts have been diverted to provide the core author team for TLC2, which provides over 1000 pages of carefully researched and tested documentation of many aspects of the vast world of LaTeX related software that was developed over that same time period and that continues to grow and improve prodigiously.

Completion of that task ... until TLC3!! ... presents the possibility of getting back to this more exciting development work, or even to more radical work on non-TeX-based models and implementations.

Of course, any such ideas are predicated on our ability to organise (with you, we hope) an efficient but responsive maintenance and support system for Standard LaTeX.

LaTeX News

Project licence news

The LaTeX Project Public License has been updated slightly so that it is now version 1.3c. In the warranty section the phrase "unless required by applicable law" has been reinstated, having got lost at some point. Also, it now contains three clarifications: of the difference between "maintained" and "author-maintained"; of the term "Base Interpreter"; and when clause 6b and 6d shall not apply.

Following requests, we now also provide the text of the licence as a LaTeX document (in the file `lppl.tex`). This file can be processed either as a stand-alone document or it can be included (without any modification) into another LaTeX document, e.g., as an appendix, using `\input` or `\include`.

New guide on font encodings

Way back in 1995 work was started on a guide to document the officially allocated LaTeX font encoding names. However, for one reason or another this guide (named *LaTeX font encodings*) was, until now, not added to the distribution. It describes the major 7-bit and 8-bit font encodings used in the LaTeX world and explains the restrictions required of conforming text font encodings. It also lists all the 'encoding specific commands' (the LICR or LaTeX Internal Character Representation) for characters supported by the encodings `OT1` and `T1`.

When the file `encguide.tex` is processed by LaTeX, it will attempt to typeset an encoding table for each encoding it describes. For this to be possible, LaTeX must be able to find `.tfm` files for a representative example font for each encoding. If LaTeX cannot find such a file then a warning is issued and the corresponding table is omitted.

Robust commands in math

The font changing commands in text-mode have been robust commands for years, but the same has not been true for the math versions such as `\mathbf`. While the math-mode commands worked correctly in section heads, they could cause problems in other places such as index entries. With this release, these math-mode commands are now robust in the same way as their text-mode counterparts.

Updates of required packages

Several of the packages in the `tools` bundle have been updated for this release.

The `xspace` package has some new features. One is an interface for adding and removing the exceptions it knows about and another is that it works with active characters. These remove problems of incompatibility with the `babel` system.

In *LaTeX News 16* we announced that some packages might begin to take advantage of ε-TeX extensions on systems where these are available: and the latest version of `xspace` does just that. Note also that fixltx2e will make use of the facilities in ε-TeX whenever these are present (see below).

The `calc` package has also been given an update with a few extra commands. The commands `\maxof` and `\minof`, each with two brace-delimited arguments, provide the usual numeric max and min operations. The commands `\settototalheight` and `\totalheightof` work like `\settoheight` and `\heightof`. There are also some internal improvements to make `calc` work with some more primitive TeX constructs, such as `\ifcase`.

The `varioref` package has acquired a few more default strings but there are still a number of languages for which good strings are still missing.

The `showkeys` package has also been updated slightly to work with more recent developments in `varioref`. Also, it now provides an easy way to define the look of the printed labels with the command `\showkeyslabelformat`.

Work on LaTeX fixes

The package known as fixltx2e has three new additions. A new command `\textsubscript` has been added as a complement to the command `\textsuperscript` in the kernel. Secondly, a new form of `\DeclareMathSizes` that allows all of its arguments to have a dimension suffix. This means you can now use expressions such as `\DeclareMathSizes{9.5dd}{9.5dd}{7.4dd}{6.6dd}`.

The third new addition is the robust command `\TextOrMath` which takes two arguments and executes one of them when typesetting in text or math mode respectively. This command also takes advantage of ε-TeX extensions if available; more specifically, when the ε-TeX extensions are available, it does not destroy kerning between previous letters and the text to be

typeset. The command is also used internally in fixltx2e to resolve a problem with `\fnsymbol`.

Also, further work has been done on reimplementing the command `\addpenalty`, which is used internally in several places: we hope it is an improvement!

The graphics bundle

The graphics bundle now supports the dvipdfmx post-processor and Jonathan Kew's XETEX program. By support we mean that the graphics packages recognize the new options `xetex` and `dvipdfmx` but we do not distribute the respective driver files.

This leads elegantly to a description of the new policy concerning such driver files in the graphics bundle. Most driver files for our graphics packages are maintained by the developers of the associated post-processor or TEX programs. The teams developing these packages are working very hard: their rapid development offers a stark contrast to the current schedule of LATEX releases. It is therefore no longer practical for the LATEX Team to be responsible for distributing the latest versions of these driver files.

Therefore the installation files for graphics have been split: there is now `graphics.ins` to install the package files and `graphics-drivers.ins` for the driver files (located in `drivers.dtx`). There is no need to install all those provided in the file `drivers.dtx`.

Please also note that, as requested by the maintainers of PStricks, we have removed the package pstcol as current versions of PSTricks make it obsolete.

Future development

The title of this section is a little misleading as it actually describes *current* development. In 1998 the expl3 bundle of packages was put on CTAN to demonstrate a possible LATEX3 programming environment. These packages have been lying dormant for some time while the LATEX Project Team were preoccupied by other things such as developing the experimental packages xor, template, etc., (and also writing that indispensable and encyclopaedic volume, The LATEX Companion – 2nd edition).

In October 2004 work on this code base was resumed with the goal of some day turning it into a kernel for LATEX3. This work can now also make full use of the widely accepted ε-TEX extensions. Currently two areas are central to this work.

- Extending the kernel code of LATEX3.
- Converting the experimental packages such as xor, template to use the new syntax internally.

Beware! Development of expl3 is happening so fast that the descriptions above might be out of date when you read this! If you wish to see what's going on then go to http://www.latex-project.org/code.html where you can download fully working code (we hope!).

LaTeX News

Issue 18, December 2007

This news never existed.

LATEX News

New LATEX release

This issue of LATEX News marks the first release of a new version of LATEX 2_ε since the publication of The LATEX Companion in 2005–2006.

Just in time for TEX Live 2009, this version is a maintenance release and introduces no new features. A number of small changes have been made to correct minor bugs in the kernel, slightly extend the Unicode support, and improve various aspects of some of the `tools` packages.

New code repository

Since the last LATEX release, the entire code base has been moved to a public svn repository[1] and the entire build architecture re-written. In fact, it has only been possible for us to consider a new LATEX release since earlier this year when the test suite was finally set up with the new system. In the process, a bug in the LATEX picture fonts distributed with TEX Live was discovered, proving that the tests are working and are still very valuable.

Now that we can easily generate new packaged versions of the LATEX 2_ε distribution, we expect to be able to roll out bug fixes in a much more timely manner than over the last few years. New versions should be distributed yearly with TEX Live. Having said this, the maintenance of the LATEX 2_ε kernel is slowing down as the bugs become fewer and more subtle. Remember that we cannot change any of the underlying architecture of the kernel or any design decisions of the standard classes because we must preserve backwards compatibility with legacy documents at all costs.

Even new features cannot be added, because any new documents using them will not compile in systems (such as journal production engines) that are generally not updated once they've been proven to work as necessary.

None of this is to say that we consider LATEX 2_ε to be any less relevant for document production than in years past: a stable system is a useful one. Moreover, the package system continues to provide a flourishing and stable means for the development of a wide range of extensions.

Babel

One area of the LATEX 2_ε code base that is still receiving feedback to be incorporated into the main distribution is the Babel system for multilingual typesetting. While the Babel sources have already been added to the svn repository the integration of the test system for Babel is still outstanding.

The future

While work on LATEX 2_ε tends to maintenance over active development, the LATEX3 project is seeing new life. Our goals here are to provide a transition from the LATEX 2_ε document processing model to one with a more flexible foundation. Work is continuing in the `expl3` programming language and the `xpackages` for document design. Future announcements about LATEX3 will be available via the LATEX Project website and in TUGboat.

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[1] http://www.latex-project.org/svnroot/latex2e-public/

LATEX News

Issue 20, June 2011

Scheduled LATEX bug-fix release

This issue of LATEX News marks the first bug-fix release
of LATEX 2ε since shifting to a new build system in 2009.
Provided sufficient changes are made each year, we
expect to repeat such releases once per year to stay in
sync with TEX Live. Due to the excitement of TEX's
2⁵-th birthday last year, we missed our window of
opportunity to do so for 2010. This situation has been
rectified this year!

Continued development

The LATEX 2ε program is no longer being actively
developed, as any non-negligible changes now could
have dramatic backwards compatibility issues with old
documents. Similarly, new features cannot be added to
the kernel since any new documents written now would
then be incompatible with legacy versions of LATEX.

The situation on the package level is quite different
though. While most of us have stopped developing
packages for LATEX 2ε there are many contributing
developers that continue to enrich LATEX 2ε by
providing or extending add-on packages with new or
better functionality.

However, the LATEX team certainly recognises that
there are improvements to be made to the kernel code;
over the last few years we have been working on
building, expanding, and solidifying the expl3
programming layer for future LATEX development. We
are using expl3 to build new interfaces for package
development and tools for document design. Progress
here is continuing.

Release notes

In addition to a few small documentation fixes, the
following changes have been made to the LATEX 2ε code;
in accordance with the philosophy of minimising
forwards and backwards compatibility problems, most
of these will not be noticeable to the regular LATEX user.

**Font subsets covered by Latin Modern and TEX
Gyre**   The Latin Modern and TEX Gyre fonts are a
modern suite of families based on the well-known
Computer Modern and 'PostScript 16' families with
many additional characters for high-quality multilingual
typesetting.[1]

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[1]See their respective TUGboat articles for more information:
http://www.tug.org/TUGboat/tb24-1/jackowski.pdf

Information about their symbol coverage in the TS1
encoding is now included in textcomp's default font
definitions.

Redefinition of \enddocument   Inside the definition
of \end{document} the .aux file is read back in to
resolve cross-references and build the table of contents
etc. From 2.09 days this was done using \input without
any surrounding braces which could lead to some issues
in boundary cases, especially if \input was redefined by
some package. It was therefore changed to use
LATEX 2ε's internal name for this function. As a result,
packages that modify \enddocument other than through
the officially provided hooks may need to get updated.

**Small improvement with split footnotes in
ftnright**   If in the first column there is more than a
full column worth of footnote material the material will
be split resulting in footnotes out of order. This issue is
now at least detected and generates an error but the
algorithm used by the package is unable to gracefully
handle it in an automated fashion (some alternatives for
resolving the problem if it happens are given in the
package documentation).

Improvement in xspace and font-switching   The
xspace package provides the command \xspace which
attempts to be clever about inserting spaces
automatically after user-defined control sequences. An
important bug fix has been made to this command to
correct its behaviour when used in conjunction with
font-switching commands such as \emph and \textbf.
Previously, writing

```
\newcommand\foo{foo\xspace}
... \emph{\foo}  bar baz
... \emph{\foo}, bar baz
```

would result in an extraneous space being inserted after
'foo' in both cases; this has now been corrected.

RTL in multicol   The 1.7 release of multicol adds
support for languages that are typeset right-to-left. For
those languages the order of the columns on the page
also needs to be reversed—something that wasn't
possible in earlier releases.

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http://www.tug.org/TUGboat/tb27-2/tb87hagen-gyre.pdf

The new feature is supported through the commands `\RLmulticolcolumns` (switching to right-to-left typesetting) and `\LRmulticolcolumns` (switching to left-to-right typesetting) the latter being the default.

Improve French `babel` interaction with `varioref`
Extracting and saving the page number turned out to be a source of subtle bugs. Initially it was done through an `\edef` with a bunch of `\expandafter` commands inside. This posed a problem if the page number itself contained code which needed protection (e.g., pr/4080) so this got changed in the last release to use `\protected@edef`. However, that in turn failed with Babel (bug report/4093) if the label contained active characters, e.g., a ":" in French. So now we use (after one failed attempt pr/4159) even more `\expandafter` commands and `\romannumeral` trickery to avoid any expansion other than what is absolutely required—making the code in that space absolutely unreadable.

```
\expandafter\def\expandafter#1\expandafter{%
\romannumeral
  \expandafter\expandafter\expandafter
\z@
\expandafter \@cdr
\romannumeral
  \expandafter\expandafter\expandafter
\z@
\csname r@#2\endcsname\@nil}%
```

Code like this nicely demonstrates the limitations in the programming layer of LaTeX 2_ε and the advantages that expl3 will offer on this level.

LaTeX News

Scheduled LaTeX bug-fix release

This issue of LaTeX News marks the second bug-fix
release of LaTeX 2ε (standard LaTeX) since shifting to a
new build system in 2009. Provided sufficient changes
are made, we expect to make such releases yearly or
every two years, in sync with TeX Live.

Release notes

This release makes no changes to the core code in the
LaTeX 2ε format but there are a small number of
documentation fixes (not listed here). In addition
several packages in the base and required areas have
been updated as detailed below.

This has been done in accordance with the
philosophy of minimising problems in both forwards
and backwards compatibility, so most of these changes
should not be noticed by the regular LaTeX user.

References in the text below of the form
"graphics/3873" are to bug reports listed at:
http://latex-project.org/cgi-bin/ltxbugs2html

fixltx2e updates

There are a number of bugs and faulty design decisions
in LaTeX 2ε that should have been corrected long ago in
the kernel code. However, such corrections cannot be
done as this would break backwards compatibility in
the following sense. A large number of documents exist
by now that have worked around the bug or have even
made use of a particular misfeature. Thus changing the
kernel code would break too many existing documents.

The corrections for these types of bug have therefore
been collected together in a package that can be loaded
only when needed; its name is fixltx2e. For this release
we made the following changes to this package:

- Misspelled float placement specifiers such as
  `\begin{figure}[tv]` instead of `tb` are silently
  ignored by the kernel code. Now we test for such
  letters and issue an error message.

- LaTeX's float handling algorithm can get out of
  sync if you mix single and double-column floats (as
  they are placed independently of each other). This
  was corrected in fixltx2e a few years ago but the fix
  was not perfect as one situation using
  `\enlargethispage` generated a low-level TeX error.
  This behaviour of the package is now improved.

New fltrace package

For years the file `ltoutput.dtx` contained some hidden
code to trace the detailed behaviour of the float
placement algorithm of LaTeX. Prompted by questions
on StackExchange we now extract this code into a new
fltrace package. To see the float algorithm in action (or
to understand why it decides to place all your floats at
the very end of the document) use

`\usepackage{fltrace} \tracefloats`

To stop tracing somewhere in the document use
`\tracefloatsoff` and to see the current value of
various float parameters use `\tracefloatvals`. As the
package is identical to the kernel code with tracing
added, it may or may not work if you load any other
package that manipulates that part of the kernel code.
In such a case your best bet is to load fltrace first.

inputenc package updates

The inputenc package allows different input encodings
for LaTeX documents to be specified including the
important `utf8` option used to specify the Unicode
UTF-8 encoding. A common mistake in documents has
been to also include this option when using the
Unicode-based TeX engines LuaTeX and XeTeX
producing strange errors as these engines natively deal
with UTF-8 characters.

If a document stored in an 8bit encoding is processed
by pdfTeX, it needs the inputenc package to work
correctly. However, if such a document is processed
unchanged by LuaTeX or XeTeX, then accented
characters may silently get dropped from the output.

The package has been modified so that if used with
LuaTeX or XeTeX, then it just issues a warning if `utf8`
or `ascii` is specified, and stops with an error for any
other encoding requested.

One further improvement has been made to the
encoding definition files (`.def`) used by inputenc: the
catcode of `@` is now saved and restored when reading
them instead of always using `\makeatother` inside the
files (latex/4192).

The tools directory

In the past each of the sub-directories in the "required"
section of the LaTeX distribution contained a single
`.ins` file to generate the code files from the source files.
We have now started to provide individual `.ins` files for
each of those packages that are likely to require updates
outside a major LaTeX release.

multicol updates

Version 1.8 of multicol implements some improvements/fixes and one extension. In the past the balancing algorithm enlarged the column height until it found a solution that satisfied all constraints. If there were insufficient break points then the final column height could have been much larger than expected and if that happened near the end of the page it resulted in the text overflowing into the bottom margin. This situation is now detected and in that case a normal page is cut and balancing is resumed on the next page. Some overflow is still allowed and controlled via the parameter `\maxbalancingoverflow`.

The use of `\enlargethispage` is now properly supported within the environment. Finally a new command `\docolaction` was added to allow the execution of code depending on the column in which the command is executed. See the documentation for details.

Bug fixes: the new version fixes both a color leak that could happen in certain situations and the problem that `multicols` could mess up the positioning of `\marginpar`s that followed the environment.

tabularx updates

The restrictions on embedding `\tabularx` `\endtabularx` into the definition of a new environment have been relaxed slightly. See the package documentation for details.

showkeys updates

The showkeys package has been updated to fix problems if used at the start of list items, and to work if brace groups (`{` and `}`) are used in the optional argument of `\cite`. (tools/4162, tools/4173)

color updates

The `\nopagecolor` command suggested by Heiko Oberdiek, available for some years in the pdftex option, has been added to the core package as suggested in graphics/3873. Currently this is supported in the driver files for dvips and pdftex. Patches to support other drivers are welcome.

graphicx updates

The graphicx version of `\rotatebox` now allows `\par` (and blank lines) in values, to match the change made to the graphics version some years ago. See graphics/4296.

keyval updates

All parsing used in the keyval package has been changed to allow `\par` (and blank lines) in values. (A second change, to parsing of brace groups in a construct such as `key={{{value}}}`, was reverted in v1.15.) See graphics/3446.

Standard LaTeX (LaTeX 2ε) and expl3

The substantial collection of innovative code in expl3 implements a new programming language that has for a while now been used by some writers of LaTeX 2ε packages. This code has recently also been made available for use on top of plain TeX or ConTeXt, largely to support generic packages that are supposed to work with different flavours of TeX. These uses in no way affect authors of LaTeX documents and such LaTeX 2ε packages will continue to work as advertised by their authors with standard LaTeX.

This code base will also become an important foundation for the kernel of LaTeX3 and so the new programming language can be described as 'The LaTeX3 Programming Language'. However, if you see or hear that a package 'uses LaTeX3' then it remains very unlikely (as yet) to mean that the package is part of some 'new version of LaTeX'.

News about the development and use of expl3 and about other developments in the LaTeX3 code base is reported regularly in the LaTeX3 News series (http://latex-project.org/l3news/), the most recent issue of which was published in March 2014.

LaTeX News

New LaTeX 2ε bug-fix policy

Introduction

For some years we have supplied bug fixes to the
LaTeX 2ε kernel via the fixltx2e package. This kept the
kernel stable, but at the expense of meaning that most
users did not benefit from bug fixes, and that some
compromises which were made to save space in the
machines of the time are still affecting most users today.

In this release we have started a new update policy.
All the fixes previously available via fixltx2e are now
enabled *by default* in the format, as are some further
extensions for extended TeX engines, ε-TeX, X⅃TeX and
LuaTeX. Compatibility and stability are still important
considerations, and while most users will not notice
these improvements, or will want to benefit from them,
a new latexrelease package is provided that will revert
all the changes and re-instate the definitions from
earlier releases. The package can also be used with
older releases to effectively *update* the kernel to be
equivalent to this 2015 release.

A new document, latexchanges, is distributed with the
release that documents all the changes to documented
commands since the 2014 LaTeX release, and will be
updated in future releases if further changes have been
made.

The latexrelease package

As noted above a new package is available to manage
differences between LaTeX releases. If you wish to revert
all changes back to the definitions as they were in
previous releases you may start your document
requesting the LaTeX release from May 2014:

```
\RequirePackage[2014/05/01]{latexrelease}
\documentclass{article}
```

Conversely if you start a large project now and want to
protect yourself against possible future changes, you
may start your document

```
\RequirePackage[2015/01/01]{latexrelease}
\documentclass{article}
```

Then the version of latexrelease distributed with any
future LaTeX release will revert any changes made in
that format, and revert to the definitions as they where
at the beginning of 2015.

If you wish to share a document using the latest
features with a user restricted to using an older format,
you may use the form above and make the latexrelease

package available on the older installation. The package
will then update the format definitions as needed to
enable the older format to work as if dated on the date
specified in the package option.

The \IncludeInRelease command

The mechanism used in the latexrelease package is
available for use in package code. If in your zzz package
you have

```
\RequirePackage{latexrelease}
\IncludeInRelease{2015/06/01}
    {\zzz}{\zzz definition}
  \def\zzz......new code
\EndIncludeInRelease
\IncludeInRelease{0000/00/00}
  {\zzz}{\zzz definition}
  \def\zzz....original
\EndIncludeInRelease
```

then in a document using a format dated 2015/06/01 or
later, the "new code" will be used, and for documents
being processed with an older format, the "original"
code will be used. Note the format date here may be
the original format date as shown at the start of every
LaTeX run, or a format date specified as a package
option to the latexrelease package.

So if the document has

```
\RequirePackage[2014/05/01]{latexrelease}
\documentclass{article}
\usepackage{zzz}
```

then it will use the *original* definition of \zzz even if
processed with the current format, as the format acts as
if dated 2014/05/01.

Limitations of the approach

The new concept provides full backward and forward
compatibility for the LaTeX format, i.e., with the help of
a current latexrelease package the kernel can emulate all
released formats (starting with 2014/06/01[1]).

However, this is not necessarily true for all packages.
Only if a package makes use of the \IncludeInRelease
functionality will it adjust to the requested LaTeX
release date. Initially this will only be true for a few
selected packages and in general it may not even be

---

[1]Patching an older format most likely works too, given that the
changes in the past have been minimal, though this isn't guaranteed
and hasn't been tested.

advisable for packages that have their own well-established release cycles and methods.

Thus, to regenerate a document with 100 % compatible behavior it will still be necessary to archive it together with all its inputs, for example, by archiving the base distribution trees (and any modifications made). However, the fact that a document requests a specific LaTeX release date should help identifying what release tree to use to achieve perfect accuracy.

Updates to the kernel

Updates incorporated from fixltx2e

The detailed list of changes incorporated from fixltx2e is available in the new latexchanges document that is distributed with this release. The main changes are that 2-column floats are kept in sequence with one column floats, corrections are made to the \mark system to ensure correct page headings in 2-column documents, several additional commands are made robust.

ε-TeX register allocation

LaTeX has traditionally used allocation routines inherited from plain TeX that allocated registers in the range 0–255. Almost all distributions have for some years used ε-TeX based formats (or XeTeX or LuaTeX) which have 2^{15} registers of each type (2^{16} in the case of LuaTeX). The etex package has been available to provided an allocation mechanism for these extended registers but now the format will by default allocate in a range suitable for the engine being used. The new allocation mechanism is different than the etex package mechanism, and supports LuaTeX's full range and an allocation mechanism for LaTeX floats as described below.

On ε-TeX based engines, an additional command, \newmarks is available (as with the etex package) that allocates extended ε-TeX marks, and similarly if XeTeX is detected a new command \newXeTeXintercharclass is available, this is similar to the command previously defined in the xelatex.ini file used to build the xelatex format.

Additional LaTeX float storage

LaTeX's float placement algorithm needs to store floats (figures and tables) until it finds a suitable page to output them. It allocates 18 registers for this storage, but this can often be insufficient. The contributed morefloats package has been available to extend this list; however, it also only allocates from the standard range 0–255 so cannot take advantage of the extended registers. The new allocation mechanism in this release incorporates a new command \extrafloats. If you get the error: `Too many unprocessed floats.` then you can add (say) \extrafloats{500} to the document preamble to make many more boxes available to hold floats.

Built-in support for Unicode engines

The kernel sources now detect the engine being used and adjust definitions accordingly, this reduces the need for the ".ini" files used to make the formats to patch definitions defined in latex.ltx.

As noted above the format now includes extended allocation routines.

The distribution includes a file unicode-letters.def derived from the Unicode Consortium's Unicode Character Data files that details the upper and lower case transformation data for the full Unicode range. This is used to set the lccode and uccode values if a Unicode engine is being used, rather than the values derived from the T1 font encoding which are used with 8-bit engines.

Finally \typein is modified if LuaTeX is detected such that it works with this engine.

l3build

This release has been tested and built using a new build system implemented in Lua, intended to be run on the texlua interpreter distributed with modern TeX distributions. It is already separately available from CTAN. This replaces earlier build systems (based at various times on make, cons, and Windows bat files). It allows the sources to be tested and packaged on a range of platforms (within the team, OS X, Windows, Linux and Cygwin platforms are used). It also allows the format to be tested on XeTeX and LuaTeX as well as the standard pdfTeX/ε-TeX engines.

Hyperlinked documentation and TDS zip files

As well as updating the build system, the team have looked again at exactly what gets released to CTAN. Taking inspiration from Heiko Oberdiek's latex-tds bundle, the PDF documentation provided now includes hyperlinks where appropriate. This has been done without modifying the sources such that users without hyperref available can still typeset the documentation using only the core distribution. At the same time, the release now includes ready-to-install TDS-style zip files. This will be of principal interest to TeX system maintainers, but end users with older machines who wish to manually update LaTeX will also benefit.

LaTeX News

Issue 23, October 2015

Contents

Enhanced support for LuaTeX

As noted in LaTeX News 22, the 2015/01/01 release of LaTeX introduced built-in support for extended TeX systems.

The range of allocated register numbers (for example, for count registers) is now set according to the underlying engine capabilities to 256, 32768 or 65536. Additional allocators were also added for the facilities added by ε-TeX (\newmark) and XeTeX (\newXeTeXintercharclass). At that time, however, the work to incorporate additional allocators for LuaTeX was not ready for distribution.

The main feature of this release is that by default it includes allocators for LuaTeX-provided features, such as Lua functions, bytecode registers, catcode tables and Lua callbacks. Previously these features have been provided by the contributed luatex (Heiko Oberdiek) and luatexbase (Élie Roux, Manuel Pégourié-Gonnard and Philipp Gesang) packages. However, just as noted with the etex package in the previous release, it is better if allocation is handled by the format to avoid problems with conflicts between different allocation schemes, or definitions made before a package-defined allocation scheme is enabled.

The facilities incorporated into the format with this release, and described below, are closely modelled on the luatexbase package and we thank the authors, and especially Élie Roux, for help in arranging this transition.

The implementation of these LuaTeX features has been redesigned to match the allocation system introduced in the 2015/01/01 LaTeX release, and there are some other differences from the previous luatexbase package. However, as noted below, luatexbase is being updated in line with this LaTeX release to provide the previous interface as a wrapper around the new implementation, so we expect the majority of documents using luatexbase to work without change.

Names of LuaTeX primitive commands

The 2015/01/01 LaTeX release for the first time initialised LuaTeX in latex.ltx if LuaTeX is being used. Following the convention used in the contributed lualatex.ini file used to set up the format for earlier releases, most LuaTeX-specific primitives were defined with names prefixed by luatex. This was designed to minimize name clashes but had the disadvantage that names did not match the LuaTeX manual, or the names used in other formats, and produced some awkward command names such as \luatexluafunction. From this release the names are enabled without the luatex prefix.

In practice this change should not affect many documents; relatively few packages access the primitive commands, and many of those are already set up to work with prefixed or unprefixed names, so that they work with multiple formats.

For package writers, if you want to ensure that your code works with this and earlier releases, use unprefixed names in the package and ensure that they are defined by using code such as:

```
\directlua{tex.enableprimitives("",
          tex.extraprimitives(
            "omega", "aleph", "luatex"))}
```

Conversely if your document uses a package relying on prefixed names then you can add:

```
\directlua{tex.enableprimitives("luatex",
          tex.extraprimitives(
            "omega", "aleph", "luatex"))}
```

to your document.

Note the compatibility layer offered by the luatexbase package described below makes several commands available under both names.

As always, this change can be reverted using:
\RequirePackage[2015/01/01]{latexrelease}
at the start of the document.

TeX commands for allocation in LuaTeX

For detailed descriptions of the new allocation commands see the documented sources in ltluatex.dtx or chapter N of source2e; however, the following new allocation commands are defined by default in LuaTeX: \newattribute, \newcatcodetable, \newluafunction and \newwhatsit. In addition, the commands \setattribute and \unsetattribute are defined to set and unset Lua attributes (integer values similar to counters, but attached to nodes). Finally several catcode tables are predefined: \catcodetable@initex, \catcodetable@string, \catcodetable@latex, \catcodetable@atletter.

Predefined Lua functions

If used with LuaTeX, LaTeX will initialise a Lua table, luatexbase, with functions supporting allocation and also the registering of Lua callback functions.

Support for older releases and plain TeX

The LuaTeX allocation functionality made available in this release is also available in plain TeX and older LaTeX releases in the files ltluatex.tex and ltluatex.lua which may be used simply by including the TeX file: `\input{ltluatex}`. An alternative for old LaTeX releases is to use:
`\RequirePackage[2015/10/01]{latexrelease}`
which will update the kernel to the current release, including LuaTeX support.

Additional LuaTeX support packages

In addition to the base LaTeX release two packages have been contributed to the contrib area on CTAN. The ctablestack package offers some commands to help package writers control the LuaTeX catcodetable functionality, and the luatexbase package replaces the previously available package of the same name, providing a compatible interface but implemented over the ltluatex code.

More Floats and Inserts

If ε-TeX is available, the number of registers allocated in the format to hold floats such as figures is increased from 18 to 52.

The extended allocation system introduced in 2015/01/01 means that in most cases it is no longer necessary to load the etex package. Many classes and packages that previously loaded this package no longer do so. Unfortunately in some circumstances where a package or class previously used the etex `\reserveinserts` command, it is possible for a document that previously worked to generate an error "no room for a new insert". In practice this error can always be avoided by declaring inserts earlier, before the registers below 256 are all allocated. However, it is better not to require packages to be re-ordered and in some cases the re-ordering is complicated due to delayed allocations in `\AtBeginDocument`.

In this release, a new implementation of `\newinsert` is used which allocates inserts from the previously allocated float lists once the classical register allocation has run out. This allows an extra 52 (or in LuaTeX, 64 thousand) insert allocations which is more than enough for practical documents (by default, LaTeX only uses two insert allocations).

Updated Unicode data

The file unicode-letters.def recording catcodes, upper and lower case mappings and other properties for Unicode characters has been regenerated using the data files from Unicode 8.0.0.

Support for Comma Accent

The command `\textcommabelow` has been added to the format. This is mainly used for the Romanian letters ȘșȚț. This was requested in latex/4414 in the LaTeX bug tracker.

Extended inputenc

The utf8 option for inputenc has been extended to support the letters s and t with comma accent, U+0218–U+021b. Similarly circumflex w and y U+0174–U+0177 are defined. Also U+00a0 and U+00ad are declared by default, and defined to be `\nobreakspace` and `\-` respectively.

The error message given on undefined UTF-8 input characters now displays the Unicode number in U+*hex* format in addition to showing the character.

Pre-release Releases

The patch level mechanism has been used previously to identify LaTeX releases that have small patches applied to the main release, without changing the main format date.

The mechanism has now been extended to allow identification of pre-release versions of the software (which may or may not be released via CTAN) but can be identified with a banner such as
`LaTeX2e <2015/10/01> pre-release-1`
Internally this is identified as a patch release with a negative patch level.

Updates in tools

The multicol package has been updated to fix the interaction with "here" floats that land on the same page as the start or end of a multicols environment.

LaTeX News

Issue 24, February 2016

Contents

LuaTeX support

This release refines the LuaTeX support introduced in the 2015/10/01 release. A number of patches have been added to improve the behavior of ltluatex (thanks largely to code review by Philipp Gesang). The kernel code has been adjusted to allow for changes in LuaTeX v0.85–v0.88. Most notably, newer LuaTeX releases allow more than 16 write streams and these are now enabled for use by `\newwrite`, but also the experimental `newtoken` Lua library has been renamed back to `token` which required small adjustments in the LuaTeX setup.

The biggest change in LuaTeX v0.85–v0.87 compared to previous versions is that all the primitives (originally defined in pdfTeX) dealing with the PDF "back end" are no longer defined, being replaced by a much smaller set of new primitives. This does not directly affect the core LaTeX files in this release but has required major changes to the `.ini` files used by TeX Live and similar distributions to set up the format files. These changes in the LuaTeX engine will affect any packages using these back end commands (packages such as graphics, color, hyperref, etc.). Until all contributed packages are updated to the new syntax users may need to add aliases for the old pdfTeX commands. A new luapdftexalias package has been contributed to CTAN (not part of the core LaTeX release) that may be used for this purpose.

See also the sections below for related changes in the tools and graphics bundles.

Unicode data

As noted in LaTeX News 22, the 2015/01/01 release of LaTeX introduced built-in support for extended TeX systems. In particular, the kernel now loads appropriate data from the Unicode Consortium to set `\lccode`, `\uccode`, `\catcode` and `\sfcode` values in an automated fashion for the entire Unicode range.

The initial approach taken by the team was to incorporate the existing model used by (plain) XeTeX and to pre-process the "raw" Unicode data into a ready-to-use form as `unicode-letters.def`. However, the relationship between the Unicode Consortium files and TeX data structures is non-trivial and still being explored. As such, it is preferable to directly parse the original (`.txt`) files at point of use. The team has

therefore "spun-out" both the data and the loading to a new generic package, unicode-data. This package makes the original Unicode Consortium data files available in the texmf tree (in `tex/generic/unicode-data`) and provides generic loaders suitable for reading this data into the plain, LaTeX 2$_\varepsilon$, and other, formats.

At present, the following data files are included in this new package:

- `CaseFolding.txt`
- `EastAsianWidth.txt`
- `LineBreak.txt`
- `MathClass.txt`
- `SpecialCasing.txt`
- `UnicodeData.txt`

These files are used either by LaTeX 2$_\varepsilon$ or by expl3 (i.e. they represent the set currently required by the team). The Unicode Consortium provides various other data files and we would be happy to add these to the generic package, as it is intended to provide a single place to collect this material in the texmf tree. Such requests can be mailed to the team as usual or logged at the package home page: https://github.com/latex3/unicode-data.

The new approach extends use of Unicode data in setting TeX information in two ways. First, the `\sfcode` of all end-of-quotation/closing punctuation is now set to 0 (transparent to TeX). Second, `\Umathcode` values are now set using `MathClass.txt` rather than setting up only letters (which was done using an arbitrary plane 0/plane 1 separation). There are also minor refinements to the existing code setting, particularly splitting the concepts of case and letter/non-letter category codes.

For XeTeX, users should note that `\xtxHanGlue` and `\xtxHanSpace` are *no longer defined*, that no assignments are made to `\XeTeXinterchartoks` and that no `\XeTeXintercharclass` data is loaded into the format. The values which were previously inherited from the plain XeTeX setup files are *not* suitable for properly typesetting East Asian text. There are third-party packages addressing this area well, notably those in the CTeX bundle. Third-party packages may need adjustment to load the data themselves; see the unicode-data package for one possible loader.

More support for east European accents

As noted in LaTeX News 23, comma accent support was added for `s` and `t` in the 2015/10/01 release. In this release a matching `\textcommaabove` accent has been added for U+0123 (`\c{g}`, ġ) which is the lower case of U+0122 (`\c{G}`, Ģ). In the OT1 and T1 encodings the combinations are declared as composites with the `\c` command, which matches the Unicode names "latin (capital|small) letter g with cedilla" and also allows `\MakeUppercase{\c{g}}` to produce `\c{G}`, as required. In T1 encoding, the composite of `\c` with `k`, `l`, `n` and `r` are also declared to use the comma below accent rather than cedilla to match the conventional use of these letters.

The UTF-8 `inputenc` option `utf8` has been extended to support all latin combinations that can be reasonably constructed with a (single) accent command an a base character for the T1 encoding so ġ, ų and similar characters may be directly input using UTF-8 encoding.

Changes in Graphics

The changes in LuaTeX v0.87 mean that the `color` and `graphics` packages no longer share the `pdftex.def` file between LuaTeX and pdfTeX. A separate file `luatex.def` (distributed separately) has been produced, and distributions are encouraged to modify `graphics.cfg` and `color.cfg` configuration files to default to the `luatex` option if LuaTeX v0.87 or later is being used. The team has contributed suitable `.cfg` files to CTAN to be used as models.

Normally it is best to let the local `graphics.cfg` automatically supply the right option depending on the TeX engine being used; however the `color` and `graphics` (and so `graphicx`) packages have been extended to have an explicit `luatex` option comparable to the existing `pdftex` and `xetex` options.

The `trig` package has been updated so that pre-computed values such as sin(90) now expand to digits (`1` rather than the internal token `\@one` in this case). This allows them to be used directly in PDF literal strings.

Changes in Tools

LuaTeX from version v0.87 no longer supports the `\write18` syntax to access system commands. A new package `shellesc` has been added to `tools` that defines a new command `\ShellEscape` that may be used in all TeX variants to provide a consistent access to system commands. The package also defines `\write18` in LuaTeX so that it continues to access system commands as before; see the package documentation for details.

Improving support for Unicode engines

Stability concerns are always paramount when considering any change to the LaTeX 2_ε kernel. At the same time, it is important that the format remains usable and gives reliable results for users. For the Unicode TeX engines XeTeX and LuaTeX there are important differences in behavior from classical (8-bit) TeX engines which mean that identical default behaviors are not appropriate. Over the past 18 months the team has addressed the most pressing of these considerations (as detailed above and in LaTeX News 22 and 23), primarily by integrating existing patches into the kernel. There are, though, important areas which still need consideration, and which *may* result in refinements to kernel support in this area in future releases.

The default font setup in LaTeX 2_ε at present is to use the `OT1` encoding. This assumes that hyphenation patterns have been read using appropriate codes: the `T1` encoding is assumed. The commonly-used hyphenation patterns today, hyph-utf8, are set up in this way for 8-bit engines (pdfTeX) but for Unicode engines use Unicode code points. This means that hyphenation will be incorrect with Unicode engines unless a Unicode font is loaded. This requires a concept of a Unicode font encoding, which is currently provided by the fontspec package in two versions, `EU1` and `EU2`. The team is working to fully understand what is meant by a "Unicode font encoding", as unlike a classical TeX encoding it is essentially impossible to know what glyphs will be provided (though each slot is always defined with the same meaning). There is also an overlap between this area and ideas of language and writing system, most obviously in documents featuring mixed scripts (for example Latin and Cyrillic).

As well as these font considerations, the team is also exploring to what extent it is possible to allow existing (8-bit) documents to compile directly with Unicode engines without requiring changes in the sources. Whether this is truly possible remains an open question.

It is important to stress that changes will only be made in this area where they do *not* affect documents processed with ε-TeX/pdfTeX (i.e. documents which are written for "classical" 8-bit TeX engines). Changes will also be made only where they clearly address deficiencies in the current setup for Unicode engines (i.e. where current behaviors are wrong).

LaTeX News

LuaTeX

This LaTeX release sees several internal changes designed to ensure that the system is still usable with LuaTeX versions greater than 0.80, which have introduced many changes into the engine, most notably the removal or renaming of most of the primitive commands introduced by pdfTeX. Also the lists of Lua callbacks handled by the callback allocation mechanism has been updated to match the callbacks defined in LuaTeX version 0.90.

These changes have also required updates in tools and amsmath as described below.

This is the first release of LaTeX for which the test suite reports no failures when used with LuaTeX.

Documentation checksums

The doc package has always provided two mechanisms that were mainly intended to guard against file truncation or corruption when files were commonly distributed by email through unreliable mail gateways: a Character Table of the ASCII character set could be inserted (and checked) and a "checksum" (count of the number of backslashes in the code sections) could be checked. These features are not really needed with modern distribution mechanisms and can be a distraction when reading the source code and so have been removed. The doc package has been updated so that if you use a \CheckSum command then, as before, the number is checked; however, if you omit the command then no error or warning is given.

Updates to inputenc

The UTF-8 support in inputenc has been further extended with support for non-breaking hyphens and more dashes.

Updates in Tools

The varioref package has been updated with improved documentation of multilingual support, and avoiding unnecessary warnings in some cases with \reftextfaraway.

The tabularx package's handling of \endtabularx in environment definitions has been fixed to again match its documentation.

The bm package has been updated as required by the changes to \mathchardef in LuaTeX.

amsmath

Since the launch of LaTeX 2ε in 1993, the amsmath bundle has been part of the *required* packages in the core LaTeX distribution, with bug reports handled by the LaTeX bug database at https://latex-project.org/bugs-upload.html.

The amsmath packages and the amscls classes have been maintained by the American Mathematical Society.

With this release a new arrangement has been agreed between the American Mathematical Society and the LaTeX3 project. The LaTeX3 project will take over maintenance of the amsmath bundle, with the American Mathematical Society retaining maintenance of amscls.

The recommended installation of these files in the TeX directory structure remains unchanged as tex/latex/amsmath and tex/latex/amscls respectively.

This release of amsmath includes several updates so that amsmath does not generate errors when math is used with LuaTeX v0.87+, which has changes to \mathchardef that are incompatible with the previous version of amsmath. It also improves \dots handling so that \long macros are correctly handled (for example, \dots \Rightarrow now uses centered dots), as well as commands expanding to character tokens (for example, \times \dots \times will use centered dots with \times defined as in the unicode-math package).

Related updates

In addition to the updates in the core LaTeX release, some files in the CTAN "contrib" area have also been updated. Notably there have been further updates to the unicode-data files; also, the files required to build plain and LaTeX formats have now been submitted to CTAN as tex-ini-files. The addition of a new luatex option for graphics-related packages (luatex-def on CTAN) has required updates to the configuration files to select a default option and these have similarly been uploaded to CTAN as graphics-cfg. (Previously these files were maintained directly in the TeX Live repository, and were not available on CTAN.)

LaTeX News

Issue 26, January 2017

Contents

ε-TeX

In LaTeX News 16 (December 2003) the team announced

> We expect that within the next two years, releases of LaTeX will change modestly in order to run best under an extended TeX engine that contains the ε-TeX primitives, e.g., ε-TeX or pdfTeX.

and also said

> Although the current release does not *require* ε-TeX features, we certainly recommend using an extended TeX, especially if you need to debug macros.

For many years the team have worked on the basis that users will have ε-TeX available but had not revisited the above statements formally. As of the January 2017 release of LaTeX 2_ε, ε-TeX is *required* to build the format, and attempting to build a format without the extensions will fail.

Practically, modern TeX distributions provide the extensions in all engines other than the "pure" Knuth `tex`, and indeed parts of the format-building process already require ε-TeX, most notably some of the UTF-8 hyphenation patterns. As such, there should be no noticeable effect on users of this change.

The team expect to make wider use of ε-TeX within the kernel in future; details will be announced where they impact on end users in a visible way.

Default encodings in XeLaTeX and LuaLaTeX

The default encoding in LaTeX has always been the original 128-character encoding `OT1`. For Unicode based TeX engines, this is not really suitable, and is especially problematic with XeLaTeX as in the major distributions this is built with Unicode based hyphenation patterns in the format. In practice this has not been a major problem as documents use the contributed fontspec package in order to switch to a Unicode encoded font.

In this release we are adding `TU` as a new supported encoding in addition to the previously supported encodings such as `OT1` and `T1`. This denotes a Unicode based font encoding. It is essentially the same as the `TU` encoding that has been on trial with the experimental `tuenc` option to fontspec for the past year.

The XeLaTeX and LuaLaTeX formats will now default to `TU` encoding and `lmr` (Latin Modern) family. In the case of LuaLaTeX the contributed luaotfload Lua module will be loaded at the start of each run to enable the loading of OpenType fonts.

The fontspec package is being adjusted in a companion release to recognise the new encoding default arrangements.

Note that in practice no font supports the full Unicode range, and so `TU` encoded fonts, unlike fonts specified for `T1`, may be expected to be incomplete in various ways. In the current release the file `tuenc.def` that implements the `TU` encoding-specific commands has made some basic assumptions for (for example) default handling of accent commands, and the set of command names is derived from the command names used for the UTF-8 support in the inputenc package, restricted roughly to the character ranges classically provided by the `T1` and `TS1` encodings, but is part of a longer term plan seen over recent releases to increase support for Unicode based TeX engines into the core LaTeX support.

If for any reason you need to process a document with the previous default `OT1` encoding, you may switch encoding in the usual ways, for example

`\usepackage[OT1]{fontenc}`

or you may roll back all the changes for this release by starting the document with

`\RequirePackage[2016/12/31]{latexrelease}`

\showhyphens in XeLaTeX

Due to the way XeLaTeX interfaces to font libraries, the standard definition of `\showhyphens` does not work. A variant definition has been available in the contributed xltxtra package, however a (slightly different) definition for `\showhyphens` is now included in XeLaTeX by default. As usual this change will be undone if an earlier release is specified using the latexrelease package.

The fixltx2e package

As described in LaTeX News 22, the fixltx2e package has become obsolete with the new update policy. Since 2015 it has just made a warning and exited. In this release we have re-introduced all the code from the original fixes in the 2014 LaTeX but guarded by `\IncludeInRelease{2015/01/01}`. So for current releases fixltx2e still just displays a warning but for old

releases, whether that is an old format, or a format with the version date reset via the latexrelease package, the fixes in the original fixltx2e will be applied.

This improves the ability to run old documents in a way that is compatible with contemporary formats. If you have a 2014 document that used `\usepackage{fixltx2e}` and you add `\RequirePackage[2014/01/01]{latexrelease}` and process it with the current format then latexrelease will undo most changes made since 2014, but now when the document includes fixltx2e it will act like a 2014 version of the package and apply the code fixes, not just give a warning that the package is obsolete.

The latexbug package

As explained in more detail at the LaTeX Project website[1] a new package, latexbug, has been produced to help produce test files to accompany bug reports on the core LaTeX distribution. This is being published separately to CTAN at the same time as this release. By using the latexbug package you can easily check that the packages involved in the test are all part of the core release. The LaTeX project cannot handle bug reports on contributed packages, which should be directed to the package maintainer as given in the package documentation.

Updates to amsmath

The amsmath package has two updates at this release.

- The spacing to the left of the `aligned` and `gathered` environments has been fixed: the spurious thin space is no longer added by default. Package options control this to revert to the original behaviour where required; see the amsldoc guide for further details.

- The large delimiters around generalised fractions (for example in the `\binom` construct) did not work in previous releases if using LuaTeX or XeTeX with OpenType math fonts. This is related to the lack of specific metrics for this use in the OpenType Math table. In principle LuaTeX has two additional named metrics to control the delimiters but these are not initialised by default, and in XeTeX it does not seem possible to make them work at all. So for Unicode TeX systems, a new implementation of `\genfrac` is used at this release that uses `\left\right` internally but parameterised to give spacing as close to the original as possible. The implementation in (pdf)TeX is unaffected.

Updates to tools

The array package has been updated to fix a longstanding but previously unreported issue with unwanted

interactions between tables in the page head or foot and the body of the page, as reported in PR tools/4488. There is also an update to the LuaTeX support in bm.

An addendum to the release changes in 2015: page breaks and vertical spacing

In 2015 we announced the introduction of the roll-back/ roll-forward concept to manage bug fixes and additions to core LaTeX in a manageable way. We also announced at that time that we now incorporate all fixes from fixltx2e into the kernel (as the old mechanism produced problems instead of improving the situation). Refer to `ltnews22.pdf` for details.

One of the fixes from fixltx2e was for a glaring bug in `\addvspace` that was originally detected in the mid-nineties and back then added to the fixltx2e support package. In certain situations `\addvspace` would result in a page/column break below the baseline of the last line. As a result documents using `\flushbottom` would show a clear misalignment (even more prominent when typesetting in two-column mode).

Starting with release 2015/01/01 this is now finally corrected already in the kernel and not only in fixltx2e. In nearly all circumstances this will either make no difference to existing documents, or it will locally improve the visual appearance of that document without changing anything on other pages. However, by the nature of the change it is also possible that there are further non-local changes to the page breaks due to the different break positions introduced by the fix.

Thus, for documents that have been written before 2015 and that should be preserved unchanged at all costs you may have to add

`\RequirePackage[2014/01/01]{latexrelease}`

at the top of the document, to roll back the format to a date before the policy change.

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[1] https://www.latex-project.org/bugs/

LaTeX News

Issue 27, April 2017

Contents

ISO 8601 Date format

Since before the first releases of LaTeX 2ε, LaTeX has used a date format in the form YYYY/MM/DD. This has many advantages over more conventional formats, as it is easy to sort and avoids the unfortunate ambiguity between different communities as to whether 01/02/2017 is the 1st of February or 2nd of January.

However there is another date format, formalised by the International Standard ISO 8601. The basic format defined by this standard is functionally equivalent to the LaTeX format, but using - rather than /. This date format is now supported in many Operating Systems and applications (for example the `date --iso-8601` command in Linux and similar systems).

From this release, LaTeX will accept ISO format date strings in the date argument of `\ProvidesPackage`, `\usepackage`, etc. Currently we recommend that you do not use this format in any packages that need to work with older LaTeX releases; the latexrelease package may be used with older releases to add this functionality. This change is handled in a special way by latexrelease: The package always adds support for ISO dates whatever format date is requested; this is required so that the necessary date comparisons may be made.

The new functionality can be seen in the startup banner which advertises `LaTeX2e <2017-04-15>`.

Further TU encoding improvements

The 2017/01/01 release saw the introduction of the new TU encoding for specifying Unicode fonts with LuaTeX and XƎTeX. There were a number of small corrections and additions in the patch releases updating 2017/01/01, and a further addition in this release, notably extended support for the dot-under accent, `\d`.

Disabling hyphenation

The existing LaTeX code for `\verb` and `verbatim` had some issues when used with fonts that were not loaded with hyphenation disabled via setting `\hyphenchar` to −1. In this release these verbatim environments use a `\language` setting, `\l@nohyphenation`, that has no hyphenation patterns associated.

The format ensures that a language has been allocated with this name. For most users this will in fact be no change as the standard babel language has for a long time allocated a language with this name.

In order that page breaks in `verbatim` do not influence the language used in the page head and foot, the format now normalises the language used in the output routine to a default language as described below.

Discretionary hyphenation

The LaTeX definition of `\-` has been adjusted so that it will insert the current font's `\hyphenchar`, as would the TeX primitive. A comment in source2e has given this new definition since the first releases of LaTeX 2ε, and in this release we finally acted upon this comment. Previously `\-` always inserted a - at a break point even if a different character would be used for automatic hyphenation with the current font.

Default document language

A new integer parameter `\document@default@language` is introduced; this is initialised to −1 but is set at `\begin{document}` to the language in force at that time if it has not been set by preamble code. This is very similar to the handling of the default color, and is used in a similar way to normalise the settings for page head and foot as described above. Users should not normally need to set this explicitly but it is expected that language packages such as babel may set this if the default behaviour is not suitable.

Line spacing in parboxes

Inside a `\parbox` LaTeX normalises the baseline spacing. However it has not previously reset `\lineskiplimit`. This meant that lines of a paragraph that have ascenders or descenders could be set with *closer* line spacing than lines without. This can easily happen if you use a `\parbox` in an AMS alignment, as they use a relatively large value of `\lineskiplimit`. As usual, the latexrelease package may be used to force the older behavior.

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Issue 28, April 2018

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A new home for LaTeX 2ε sources

In the past the development version of the LaTeX 2ε source files has been managed in a Subversion source control system with read access for the public. This way it was possible to download in an emergency the latest version even before it was released to CTAN and made its way into the various distributions.

We have recently changed this setup and now manage the sources using Git and placed the master sources on GitHub at

where we already store the sources for expl3 and other work. As before, direct write access is restricted to LaTeX Project Team members, but everything is publicly accessible including the ability to download, clone (using Git) or checkout (using SVN). More details are given in [1].

Bug reports for core LaTeX 2ε

For more than two decades we used GNATS, an open source bug tracking system developed by the FSF. While that has served us well in the past it started to show its age more and more. So as part of this move we also decided to finally retire the old LaTeX bug database and replace it with the standard "Issue Tracker" available at Github.

The requirements and the workflow for reporting a bug in the core LaTeX software is documented at

and with further details also discussed in [1].

UTF-8: the new default input encoding

The first TeX implementations only supported reading 7-bit ascii files—any accented or otherwise "special" character had to be entered using commands, if it could be represented at all. For example to obtain an "ä" one would enter \"a, and to typeset a "ß" the command \ss. Furthermore fonts at that time had 128 glyphs inside, holding the ascii characters, some accents to build composite glyphs from a letter and an accent, and a few special symbols such as parentheses, etc.

With 8-bit TeX engines such as pdfTeX this situation changed somewhat: it was now possible to process 8-bit

files, i.e., files that could encode 256 different characters. However, 256 is still a fairly small number and with this limitation it is only possible to encode a few languages and for other languages one would need to change the encoding (i.e., interpret the character positions 0–255 in a different way). The first code points 0–127 were essentially normed (corresponding to ascii) while the second half 128–255 would vary by holding different accented characters to support a certain set of languages.

Each computer used one of these encodings when storing or interpreting files and as long as two computers used the same encoding it was (easily) possible to exchange files between them and have them interpreted and processed correctly.

But different computers may have used different encodings and given that a computer file is simply a sequence of bytes with no indication for which encoding is intended, chaos could easily happen and has happened. For example, the German word "Größe" (height) entered on a German keyboard could show up as "GrṮàe" on a different computer using a different encoding by default.

So in summmary the situation wasn't at all good and it was clear in the early nineties that LaTeX 2ε (that was being developed to provide a LaTeX version usable across the world) had to provide a solution to this issue.

The LaTeX 2ε answer was the introduction of the inputenc package [2] through which it is possible to provide support for multiple encodings. It also allows to correctly process a file written in one encoding on a computer using a different encoding and even supports documents where the encoding changes midway.

Since the first release of LaTeX 2ε in 1994, LaTeX documents that used any characters outside ascii in the source (i.e. any characters in the range of 128–255) were supposed to load inputenc and specify in which file encoding they were written and stored. If the inputenc package was not loaded then LaTeX used a "raw" encoding which essentially took each byte from the input file and typeset the glyph that happened to be in that position in the current font—something that sometimes produces the right result but often enough will not.

In 1992 Ken Thompson and Rob Pike developed the UTF-8 encoding scheme which enables the encoding of all Unicode characters within 8-bit sequences. Over time this encoding has gradually taken over the world, replacing the legacy 8-bit encodings used before. These

days all major computer operating systems use UTF-8 to store their files and it requires some effort to explicitly store files in one of the legacy encodings.

As a result, whenever LaTeX users want to use any accented characters from their keyboard (instead of resorting to `\"a` and the like) they always have to use

    \usepackage[utf8]{inputenc}

in the preamble of their documents as otherwise LaTeX will produce gibberish.

The new default

With this release, the default encoding for LaTeX files has been changed from the "fall through raw" encoding to UTF-8 if used with classic TeX or pdfTeX. The implementation is essentially the same as the existing UTF-8 support from `\usepackage[utf8]{inputenc}`.

The LuaTeX and XƎTeX engines always supported the UTF-8 encoding as their native (and only) input encoding, so with these engines inputenc was always a no-op.

This means that with new documents one can assume UTF-8 input and it is no longer required to always specify `\usepackage[utf8]{inputenc}`. But if this line is present it will not hurt either.

Compatibility

For most existing documents this change will be transparent:

- documents using only ASCII in the input file and accessing accented characters via commands;

- documents that specified the encoding of their file via an option to the inputenc package and then used 8-bit characters in that encoding;

- documents that already had been stored in UTF-8 (whether or not specifying this via inputenc).

Only documents that have been stored in a legacy encoding and used accented letters from the keyboard *without* loading inputenc (relying on the similarities between the input used and the T1 font encoding) are affected.

These documents will now generate an error that they contain invalid UTF-8 sequences. However, such documents may be easily processed by adding the new command `\UseRawInputEncoding` as the first line of the file. This will re-instate the previous "raw" encoding default.

`\UseRawInputEncoding` may also be used on the command line to process existing files without requiring the file to be edited

    pdflatex '\UseRawInputEncoding \input' file

will process the file using the previous default encoding.

Possible alternatives are reencoding the file to UTF-8 using a tool (such as recode or iconv or an editor) or adding the line

    \usepackage[⟨encoding⟩]{inputenc}

to the preamble specifying the ⟨*encoding*⟩ that fits the file encoding. In many cases this will be `latin1` or `cp1252`. For other encoding names and their meaning see the inputenc documentation.

As usual, this change may also be reverted via the more general latexrelease package mechanism, by speciying a release date earlier than this release.

BOM: byte order mark handling

When using Unicode the first bytes of a file may be a, so called, BOM character (byte order mark) to indicate the byte oder used in the file. While this is not required with UTF-8 encoded files (where the byte order is known) it is nevertheless allowed by the standard and some editors add that byte sequence to the beginning of a file. In the past such files would have generated a "Missing begin document" error or displayed strange characters when loaded at a later stage.

With the addition of UTF-8 support to the kernel it is now possible to identify and ignore such BOMs characters even before `\documentclass` so that these issues will no longer be showing up.

A general rollback concept for packages and classes

In 2015 a rollback concept for the LaTeX kernel was introduced. Providing this feature allowed us to make corrections to the software (which more or less didn't happen for nearly two decades) while continuing to maintain backward compatibility to the highest degree.

In this release we have now extended this concept to the world of packages and classes which was not covered initially. As the classes and the extension packages have different requirements compared to the kernel, the approach is different (and simplified). This should make it easy for package developers to apply it to their packages and authors to use when necessary.

The documentation of this new feature is given in an article submitted to TUGboat and also available from our website [3].

Integration of remreset and chngcntr packages into the kernel

With the optional argument to `\newcounter` LaTeX offers to automatically reset counters when some counter is stepped, e.g., stepping a `chapter` counter resets the `section` counter (and recursively all other heading counters). However, what was until now missing was a way to undo such a link between counters or to link two counters after they have been defined.

This can be now be done with `\counterwithin` and `\counterwithout`, respectively. In the past one had to load the chngcntr package for this. For the programming level we also added `\@removefromreset` as the counterpart of the already existing `\@addtoreset` command. Up to now this was offered by the remreset package.

Testing for undefined commands

LaTeX packages often use a test `\@ifundefined` to test if a command is defined. Unfortunately this had the side effect of *defining* the command to `\relax` in the case that it had no definition. The new release uses a modified definition (using extra testing possibilities available in ε-TeX. The new definition is more natural, however code that was relying on the side effect of the command being tested being defined if it was previously undefined may have to add `\let\`⟨*command*⟩`\relax`.

Changes to packages in the tools category

LaTeX table columns with fixed widths
Frank published a short paper in TUGboat [4] on producing tables that have columns with fixed widths. The outlined approach using column specifiers "`w`" and "`W`" has now been integrated into the array package.

Obscure overprinting with multicol fixed
A rather peculiar bug was reported on StackExchange for multicol. If the column/page breaking was fully controlled by the user (through `\columnbreak`) instead of letting the environment do its job and if then more `\columnbreak` commands showed up on the last page then the balancing algorithm was thrown off track. As a result some parts of the columns did overprint each other.

The fix required a redesign of the output routines used by multicol and while it "should" be transparent in other cases (and all tests in the regession test suite came out fine) there is the off-chance that code that hooked into internals of multicol needs adjustment.

Changes to packages in the amsmath category

With this release of LaTeX a few minor issues with amsmath have been corrected.

Updated user's guide
Furthermore, `amsldoc.pdf`, the AMS user's guide for the amsmath package [5], has been updated from version 2.0 to 2.1 to incorporate changes and corrections made between 2016 and 2018.

References

[1] Frank Mittelbach: *New rules for reporting bugs in the LaTeX core software.* In: TUGboat, 39#1, 2018. https://www.latex-project.org/publications/

[2] Frank Mittelbach: *LaTeX 2ε Encoding Interface — Purpose, concepts, and Open Problems.* Talk given in Brno June 1995. https://www.latex-project.org/publications/

[3] Frank Mittelbach: *A rollback concept for packages and classes.* Submitted to TUGboat. https://www.latex-project.org/publications/

[4] Frank Mittelbach: *LaTeX table columns with fixed widths.* In: TUGboat, 38#2, 2017. https://www.latex-project.org/publications/

[5] American Mathematical Society and The LaTeX3 Project: *User's Guide for the amsmath package* (Version 2.1). April 2018. Available from https://www.ctan.org and distributed as part of every LaTeX distribution.

LaTeX News

Issue 29, December 2018

Contents

Introduction

The December 2018 release of LaTeX is a maintenance release in which we have fixed a few bugs in the software: some are old, some newer, and they are mostly rather obscure.

Bug reports for core LaTeX 2$_\varepsilon$ and packages maintained by the Project Team

In Spring 2018 we established a new issue tracking system (GitHub issues) for both the LaTeX core and the packages maintained by the LaTeX Project team, with an updated procedure for how to report a bug or problem.

Initial experience with this system is good, with people who report problems following the guidelines and including helpful working examples to show the problem—thanks for doing this.

The detailed requirements and the workflow for reporting a bug in the core LaTeX software is documented at

<p align="center"><code>https://www.latex-project.org/bugs/</code></p>

with further details and discussion in [1].

Changes to the LaTeX kernel

UTF-8: updates to the default input encoding

In the April 2018 release of LaTeX we changed the default encoding from 7-bit ASCII to UTF-8 when using classic TeX or pdfTeX, see *LaTeX News 28* [2] for details.

Now, after half a year of experience with this new default, we have made a small number of adjustments to further improve the user experience. These include:

- Some improvements when displaying error messages about UTF-8 characters that have not been set up for use with LaTeX, or are invalid for some other reason;   *(github issues 60, 62 and 63)*

- The addition of a number of previously missing declarations for characters that are in fact available with the default fonts, e.g., \j "ȷ" (0237), \SS "SS" (1E9E), \k{} "˛" (02DB) and \.{} "˙" (02D9);

- Correcting the names for \guillemetleft "«" and \guillemetright "»" in all encoding files. These correct names are in addition to the old (but wrong) Adobe names: Adobe mistakenly called them Guillemot, which is a sea bird.
  (github issue 65)

- Added \Hwithstroke and \hwithstroke necessary for typesetting Maltese.
  (https://tex.stackexchange.com/q/460110)

Fixed \verb* and friends in X$_Ǝ$TeX and LuaTeX

The original \verb* and verbatim* in LaTeX were coded under the assumption that the position of the space character (i.e., ASCII 32) in a Typewriter Font contains a visible space glyph "␣". This is correct for pdfTeX with the most used font encodings OT1 and T1. However, this unfortunately does not work for Unicode engines using the TU encoding since the space character slot (ASCII 32) then usually contains a real (normal) space, which has the effect that \verb* produces the same results as \verb.

The `\verb*` code now always uses the newly introduced command `\verbvisiblespace` to produce the visible space character and this command will get appropriate definitions for use with the different engines. With pdfTeX it will simply use `\asciispace`, which is a posh name for "select character 32 in the current font", but with Unicode engines the default definition is

```
\DeclareRobustCommand\verbvisiblespace
   {\leavevmode
    {\usefont{OT1}{cmtt}{m}{n}\asciispace}}
```

which uses the visible space from the font Computer Modern Typewriter, regardless of the currently chosen typewriter font. Internally the code ensures that the character used has exactly the same width as the other characters in the current (monospaced) font; thus, for example, code displays line up properly.

It is possible to redefine this command to select your own character, for example

```
\DeclareRobustCommand\verbvisiblespace
   {\textvisiblespace}
```

will select the the "official" visible space character of the current font. This may look like the natural default, but it wasn't chosen as our default because many fonts just don't have that unicode character, or they have one with a strange shape. *(github issues 69 and 70)*

Error message corrected
Trying to redefine an undefined command could in a few cases generate an error message with a missing space, e.g., `\renewcommand\1{...}` gave

```
   LaTeX Error: \1undefined.
```

This is now fixed. *(github issue 41)*

Fixed fatal link error with hyperref
If a `\href` link text gets broken across pages pdfTeX and LuaTeX will generate a fatal error unless both parts of the link are internally at the same boxing level. In two-column mode that was not the case if one of the pages had spanning top floats. This has now been changed so that the error is avoided. *(github issue 94)*

Avoid page breaks caused by invisible commands
Commands like `\label` or `\index` could generate a potential page break in places where a page break was otherwise prohibited, e.g., when used between two consecutive headings. This has now been corrected. If for some reason you really want a break and you relied on this faulty behavior, you can always add one using `\pagebreak`, with or without an optional argument. *(github issue 81)*

Prevent spurious spaces when reading table of contents data
When table of contents data is read in from a `.toc` file, the new-line character at the end of each line is converted by TeX to a space. In normal processing this is harmless (as TeX is doing this input reading whilst in vertical mode and each line in the file represents a single line (paragraph) in the table of contents. If, however, this is done in horizontal mode, which is sometimes the case, then these spaces will appear in the output. If you then omit some of the input lines (e.g., because you do not display TOC data below a certain level), then these spaces accumulate in the typeset output and you get surprising, and unwanted, gaps inside the text.

The new code now adds a `%` sign at the end of problematic lines in the `.toc` file so that TeX will not generate such spaces that may survive to spoil the printed result. As some third party packages have augmented or changed the core LaTeX functionality in that area (for example, by adding additional arguments to the commands in TOC files) the code uses a conservative approach and the `%` signs are added only when certain conditions are met. Therefore some packages might require updates if they want to benefit from this correction, especially if they unconditionally overwrite LaTeX's `\addcontentsline` definition. *(github issue 73)*

Prevent protrusion in table of contents lines
In TeX's internal processing model, paragraph data is one of the major data structures. As a result, many things are internally modeled as paragraphs even if they are not conceptually "text paragraphs" in the traditional sense. In a few cases this has some surprising effects that are not always for the better. One example is standard TOC entries, where you have heading data followed by some dot leaders and a page number at the right, produced, for example, from this:

The space reserved for the page number is of a fixed width, so that the dots always end in the same place. Well, they did end in the same place until the event of protrusion support in the TeX engines. Now, with the `microtype` package loaded, it is possible that the page number will protrude slightly into the margin (even though it's typeset inside a box) and as a result this page number box gets shifted. With enough bad luck this can get you another dot in the line, sticking out like the proverbial sore thumb, as exhibited in the question on StackExchange that triggered the correction.

LaTeX now takes care that there will be no protrusion happening on such lines, even if it is generally enabled for the whole document. *(https://tex.stackexchange.com/q/172785)*

Start L-R mode for `\thinspace` and friends

In LaTeX, commands that are intended only for paragraph (L-R) mode are generally careful to start paragraph mode if necessary; thus they can be used at the start of a paragraph without surprising and unwanted consequences. This important requirement had been overlooked for a few horizontal spacing commands, such as `\thinspace` (a.k.a. "`\,`"), and for some other support commands such as `\smash` or `\phantom`. Thus they ended up adding vertical space when used at the beginning of a paragraph or, in the case of `\smash`, creating a paragraph of their own. This has now been corrected, and a corresponding update has been made to the `amsmath` package, in which these commands are also defined.   *(github issues 49 and 50)*

Guarding `\pfill` in doc

For presenting index entries pointing to code fragments and the like, the `doc` package has a `\pfill` command that generates within the index a line of dots leading from the command name to the page or code line numbers. If necessary it would automatically split the entry over two lines. That worked well enough for a quarter century, but we discovered recently that it is broken inside the `ltugboat` class, where it sometimes produces bad spacing within continuation lines.

The reason turned out to be a redefinition of the LaTeX command `\nobreakspace` (`~`) inside the class `ltugboat`, which removed any preceding space (and thus unfortunately also removed the dots on the continuation line). While one can argue that this is a questionable redefinition, it has been in the class so long that changing it would certainly break older documents. So instead we now guard against that removal of space.
                                (github issues 25 and 75)

Changes to packages in the tools category

Sometimes the trace package turned off too much

The `trace` package is a useful little tool for tracing macro execution: it hides certain lengthy and typically uninteresting expansions resulting from font changes and similar activities. However, it had the problem that it also reset other tracing settings such as `\showoutput` in such situations, so that you couldn't use `\showoutput` in the preamble to get symbolic output of all the pages in the document. This has now been corrected.

Update to xr

The `xr` package has been updated so that the code that reads the `.aux` file has been made more robust. It now correctly ignores conditionals (added by `hyperref` and other packages) rather than generating low level parsing errors.   *(https://tex.stackexchange.com/a/452321)*

Column data for `multicols*` sometimes vanished

In certain situations involving `multicols*`, when there are more explicit `\columnbreak` requests than there are columns on the current page, data could vanish due to the removal of an internal penalty marking the end of the environment. This has been corrected by explicitly reinserting that penalty if necessary.   *(github issue 53)*

Extension to `\docolaction` in multicol

The `\docolaction` command can be used used to carry out actions depending on the column you are currently in, i.e., first, any inner one (if more than two) or last. However, if the action generates text then there is the question: is this text part of the current column or the one after? That is, on the next run, do we test before or after it, to determine in which column we are?

This is now resolved as follows: if you use `\docolaction*` any generated text by the chosen action is considered to be after the test point. But if you use the command without the star then all the material it generates will be placed before the test point to determine the current column, i.e., the text will become part of the current column and may affect the test result on the next run.

Prevent color leak in array

In some cases the color used inside a `tabular` cell could "leak out" into the surrounding text. This has been corrected.   *(github issue 72)*

Support fragile commands in `array` or `tabular` column templates

The preamble specifiers `p`, `m` and `b` each receives a user supplied argument: the width of the paragraph column. Normally that is something harmless, like a length or a simple length expression. But in more complicated settings involving the `calc` package it could break with a low-level error message. This has now been corrected.
                                (https://tex.stackexchange.com/q/459285)

Changes to packages in the amsmath category

The changes in the kernel made for `\thinspace`, `\smash`, etc. (see above) have been reflected in the `amsmath` package code, so that loading this package doesn't revert them.   *(github issues 49 and 50)*

Website updates

Publications area reorganized and extended

To help readers to find relevant information in more convenient and easy ways, the area of the website covering publications by the LaTeX Project Team was reorganized and extended (many more abstracts added). We now provide the articles, talks and supplementary data structured both by year and also by major topics [4]. Feel free to take a look.

Japanese translations of the user's guide

Yukitoshi Fujimura has kindly translated into Japanese two documents that are distributed with standard LaTeX. These are:

- LaTeX 2_ε for authors;
- User's Guide for the amsmath [5].

They can be found on the website documentation page [3]. You will now also find there a typeset version of the full LaTeX 2_ε source code (with index etc.) and a number of other goodies.

References

[1] Frank Mittelbach: *New rules for reporting bugs in the LaTeX core software.* In: TUGboat, 39#1, 2018.
https://latex-project.org/publications/

[2] *LaTeX News, Issue 28.* In: TUGboat, 39#1, 2018.
https://latex-project.org/news/latex2e-news/

[3] *LaTeX documentation on the LaTeX Project Website.*
https://latex-project.org/documentation/

[4] *LaTeX Project publications on the LaTeX Project Website.*
https://latex-project.org/publications/

[5] American Mathematical Society and The LaTeX3 Project: *User's Guide for the amsmath package* (Version 2.1). April 2018. Available from https://www.ctan.org and distributed as part of every LaTeX distribution.