# LaTeX News

Issue 40, November 2024 — DRAFT version for upcoming release (LaTeX release 2024-11-01)

## Contents

## Introduction

*to write . . . 30th aniversary of LaTeX 2ε this year btw*

## Switch to T1 as default encoding in documents using `\DocumentMetadata`

As it is well known the font encoding `OT1` supports only 128 characters and has various problems and quirks notably for languages different to English. Nevertheless `OT1` is the default encoding in LaTeX and this can not be easily changed without affecting many documents as the `T1` version of the fonts have slightly different metrics.

The introduction of the `\DocumentMetadata` command, which announces *new* code and changes that can also affect the layout gives us now the opportunity to make this step. So with this version a use of `\DocumentMetadata` with (pdf)LaTeX will setup `T1` as default font encoding[1]. To ensure that scalable fonts are used, the package cm-super has to be installed. Users who want to revert to the `OT1` encoding in their document can do so with `\usepackage[OT1]{fontenc}`.

## News from the "LaTeX Tagged PDF" project

The tagging of tabulars has been extended: it is now possible to tag also row headers and to create cells that span more than one row.

*write more details ...*

The math module will automatically generate a MathML file and use it to attach MathML associated files to the structure if luaLaTeX and the unicode-math package are used and the luamml is found. This new feature can be disabled with `\tagpdfsetup{math/mathml/luamml=false}` More details can be found in the documentation of latex-lab-math.

At `https://latex3.github.io/tagging-project/tagging-status/` we show the status of many LaTeX Packages and Classes with respect to PDF tagging. We also started to improve tagging support in external packages. If the `firstaid` key is used in addition to the `phase-III` key basic commands of packages like amsthm and fancyvrb can now be used.

## Handling paragraph continuation

Already LaTeX 2.09 offered some automatism to detect whether or not text after a list or some other display environment is meant to be a continuation of the current paragraph or should start a new one. The document-level syntax for this is that a blank line after such an

[1] The Unicode engines will continue to use `TU` as encoding.

environment signals to LaTeX that it should start a new paragraph; whilst no blank line signals that there should be no new paragraph and the text should be considered a continuation.

Unfortunately, there are a number of cases where the original 2.09 approach failed, e.g., with

```
{⟨local customizations⟩
\begin{equation} a<b \end{equation}}
⟨some text⟩
```

the ⟨*some text*⟩ incorrectly started a new paragraph. Bug reports about this behavior can be traced back to the time LaTeX 2ε was developed, e.g., one test file from 1992 has a note that the above case was unfortunately not resolvable despite some improvements made back then. The main cause of the issue (as you probably guessed) is that the mechanism failed whenever the environment was executed within a group (`{...}`, `\begingroup`/`\endgroup`, or `\bgroup`/`\egroup` pair) that was closed before the next blank line was reached.

While most of the time this could be visually corrected by adding some explicit `\noindent`, the situation got worse when we tried to implement tagged PDFs resulting in incorrect structures or worse.

We therefore made a new attempt to resolve this problem in every situation and this new solution is rolled out in the current release.

## New or improved commands

### Avoid bogus "no item" error

The commands `\addvspace` and `\addpenalty` generated the famous error message "Something's wrong–perhaps a missing `\item`" when they were encountered outside vertical mode. Most of the time this error was bogus and if not, then it was generated several times rather than once.

Once upon a time (in LaTeX 2.09) it was necessary that these commands were used only in vertical mode, but with LaTeX 2ε in 1994, we changed the internals but simply overlooked that this error message then had become useless. In this release, i.e., 30 years too late, we have finally lifted the ban and from now on this error should only show up if there is indeed a missing `\item`.

*(github issue 1460)*

## Code improvements

### Avoiding keyval option clashes between classes and packages

In LaTeX News 35 [4] we introduced keyval option processing to the kernel. Following the standard for LaTeX 2ε options, keyval options given to the `\documentclass` line were treated as global and so parsed by every package. However, with keyvals, the likelihood of a name clash between a class-specific option and one used by a package is much higher than it is with simple strings. We have therefore refined the mechanism in the current release.

When a class uses the kernel keyval processor, any options it recognises are recorded and any packages using the keyval processor will then *skip* these "global" options. To allow for the case where a class directly uses an option which should be global (for example `draft`), a new key property `.pass-to-packages` has been added. This can then be set to indicate that this key is not to be skipped. For example

```
\DeclareKeys{
  draft .if = {ifl@cls@draft},
  draft .pass-to-packages = true,
  mode  .store = \cls@mode
}
```

in a class would create two options, `draft` and `mode`. The `draft` option will be treated in the normal way by packages using keyvals, but they will ignore the `mode` option: it is effectively marked as "private" to the class.

*(github issue 1279)*

### Improved error raised by empty hook

When using the hook management, both hook and label names (if specified) should be non-empty. Before empty hook and empty label both raised the same label-specific error.

```
! LaTeX hooks Error: Empty code label on line ....
  Using ’top-level’ instead.
```

This has now been improved. Now empty hook raises

```
! LaTeX hooks Error: Empty hook on line ....
```

*(github issue 1423)*

### Provide counter representations for link targets

To create unique target names for links the package hyperref uses a special counter representation `\theH`⟨*counter*⟩. To ensure that this counter representation exists, hyperref redefined the commands `\@definecounter`, `\@addtoreset` and `\refstepcounter`. This counter representation is also needed for the Tagged PDF project and and so these augmented command definitions have now been incorporated into the kernel. Thus from now on every `\newcounter{`⟨*counter*⟩`}` will not only define `\the`⟨*counter*⟩ but also `\theH`⟨*counter*⟩.

### Extending `\refstepcounter`

The package hyperref redefines since many years `\refstepcounter` and adds code that creates link targets. The kernel definition has now been extended with socket interfaces that will allow hyperref to avoid the redefinitions. The new interfaces are also used by the Tagged PDF code that needs target names to resolve references between structures.

## Bug fixes

### Fix wrong file type in a rollback warning

When LaTeX is rolled back to date ⟨*date1*⟩ and a class or package with minimum date requirement ⟨*date2*⟩ is to be loaded, a rollback warning is raised if ⟨*date2*⟩ is later than ⟨*date1*⟩:

```
LaTeX Warning: Suspicious rollback/min-date
               date given.
  A minimal date of YYYY-MM-DD has been
  specified for package '<pkgname>'.
  But this is in conflict with a rollback
  request to YYYY-MM-DD.
```

In some cases this message showed a wrong file type, i.e., `document class '<pkgname>'` or `package '<clsname>'`. This has now been corrected. *(github issue 870)*

### Fix existence check of document environments

`\NewDocumentEnvironment` and friends define (or redefine) a document environment using the space-trimmed ⟨*envname*⟩, but the existence check for ⟨*envname*⟩ was done without space trimming. Thus when the user-specified ⟨*envname*⟩ consists of leading and/or trailing space(s), it may lead to erroneously silent environment declaration. For example, in

```
  \NewDocumentEnvironment{myenv}{}{begin}{end}
  \NewDocumentEnvironment{ myenv }{}{begin}{end}
```

the first line defines a new environment `myenv` but the second line would check existence for ` myenv ` (which is not yet defined), then redefine `myenv` environment without raising any errors. This has now been corrected. *(github issue 1399)*

### Handling of global keys with spaces

If the global (class) options contained spaces around key names, `\ProcessKeyOptions` would fail to remove known keys from the list of unused global options and `\OptionNotUsed` would mistakenly add space-surrounded key names to that list. These has been corrected as a hotfix in patch level 1 of the November 2023 release (but unfortunately not mentioned in [5]) and the current release, respectively. *(github issue 1238)*

### File list entries for rolled back packages/classes

When the rollback mechanism for packages and classes was introduced in 2018 [3], loading of the selected historic release was not recorded in the file list used by `\listfiles`. This has now been corrected so that the extended usage [6]

```
\listfiles[hashes,sizes]
```

now gives more complete and less confusing info. *(github issue 1413)*

### doc: `\PrintDescribeMacro` in preamble

In doc version 2 it was possible alter the definition of `\PrintDescribeMacro` and similar commands in preamble. In version 3 this stopped working because they go reset at the end of the preamble. This has now been implemented differently and changes in the preamble are possible again. *(github issue 1000)*

## Improvement to XeTeX `\showhyphens`

When using `\showhyphens` with XeTeX, missing character warnings would be generated for any character not in Latin Modern. This has been corrected and the warnings are suppressed. *(github issue 1380)*

## Avoid code duplication in rollback

When the kernel uses `\AddToHook` in a region that might be rolled back (which happens in a few places) and a document requests a rollback, then we have the situation that the hook already contains code to which we added the same (or slightly different) code during the rollback; this results in code duplication or, worse, in errors. This has now been corrected by dropping any such code chunk (if there is one) prior to adding the rollback code. *(github issue 1407)*

## Passing template keys using `\KeyValue`

With the move of the template code to the kernel, some internal efficiencies were also made. However, there was an oversight in how passing key values from one setting to another was implemented, meaning that using `\KeyValue` could result in an infinite loop. This has now been fixed. *(github issue 1486)*

## Changes to packages in the amsmath category

## Extend support for `\dots`

The implementation of `\dots` in amsmath has the feature that it selects different dots depending on the symbol that follows: e.g., dots between commas would normally be on the baseline, while dots between binary or relational symols would be raised. However, when symbols such as `\cong` were protected from expansion in moving arguments (so that they worked in places such as headings) it had the unfortunate side-effect that the `\dots` magic stopped working for them. This has now been corrected. *(github issue 1265)*

## Changes to packages in the tools category

### Modification to generation of the `.tex` from fileerr

The fileerr extraction has been modified to write `rename-to-empty-base.tex` rather than `.tex` to comply with an expected security change in texlive 2025. `build.lua` has been modified to rename

`rename-to-empty-base.tex` to `.tex` after unpacking. However if using docstrip directly rather than using l3build or the unpacked zip file from CTAN, the user must now rename the file and install as `.tex`. *(github issue 1412)*

### array: Tagging support for `\cline`

In the last release we added tagging support for array, longtable and other tabular packages, but we overlooked that the kernel definition for `\cline` also needs modification because the rule generated by the command needs to be tagged as an artifact. Furthermore, the processing of a `\cline` looks to the algorithm as if another row is added (which is technically what happens), thus it was also necessary to decrement the internal row counter to get a correct row count. This has now been corrected in array which is automatically loaded for tagging, so that all these packages are now fully compatible with the tagging code if it is turned on. *(github tagging issue 134)*

### longtable: Extend caption type

The longtable has been extended and now provides the command `\LTcaptype` (stemming from the ltcaption package) to change the counter and caption type used by the `\caption` command from longtable. So with `\renewcommand\LTcaptype{figure}`, a longtable will step the figure counter instead of the table counter and produce an entry in the list of figures. An empty definition, `\renewcommand\LTcaptype{}`, will suppress increasing of the counter. This makes it easy to define an unnumbered variant of longtable:

```
\newenvironment{longtable*}
  {\renewcommand\LTcaptype{}\longtable}
  {\endlongtable}
```

### array: Improve `>{...}` specifier

If the argument of `>{...}` ended with a command accepting a trailing optional argument, e.g., defined for example with `\NewDocumentCommand\foo{o}{...}`, one could get low-level parsing errors. This has now been corrected. *(github issue 1468)*

## References

[1] Leslie Lamport. *LaTeX: A Document Preparation System: User's Guide and Reference Manual*. Addison-Wesley, Reading, MA, USA, 2nd edition, 1994. ISBN 0-201-52983-1. Reprinted with corrections in 1996.

[2] LaTeX Project Team. *LaTeX 2ε news 1–39*. June, 2024. `https://latex-project.org/news/latex2e-news/ltnews.pdf`

[3] LaTeX Project Team. *LaTeX 2ε news 28*. April 2018. `https://latex-project.org/news/latex2e-news/ltnews28.pdf`

[4] LaTeX Project Team. *LaTeX 2ε news 35*. June 2022. `https://latex-project.org/news/latex2e-news/ltnews35.pdf`

[5] LaTeX Project Team. *LaTeX 2ε news 38*. November 2023. `https://latex-project.org/news/latex2e-news/ltnews38.pdf`

[6] LaTeX Project Team. *LaTeX 2ε news 39*. June 2024. `https://latex-project.org/news/latex2e-news/ltnews39.pdf`