

# **MiK<sub>T</sub>E<sub>X</sub> 2.9 Manual**

**Revision 2.9.4533**

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# About this Document

This is version 2.9.4533 of the MiKTeX manual. It corresponds to MiKTeX 2.9 as at May 30, 2012.

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**Part I**

**User Guide**

# Chapter 1

## Introduction

### 1.1 About this Manual

This manual is about MiKTeX: the purpose of this manual is not to give an introduction into the world of T<sub>E</sub>X. If you are not familiar with using T<sub>E</sub>X (and Friends), then please consider reading one of the tutorials available on the Internet<sup>1</sup> <[http://www.tex.ac.uk/cgi-bin/texfaq2html?label=tutorials\\*](http://www.tex.ac.uk/cgi-bin/texfaq2html?label=tutorials*)>.

### 1.2 About MiKTeX

MiKTeX (pronounced *mik-tech*) is an up-to-date implementation of T<sub>E</sub>X and related programs for Windows (all current variants). T<sub>E</sub>X is a typesetting system invented by D. E. Knuth.

MiKTeX's main features include:

- easy to install
- integrated package management: missing packages can be installed automatically (on-the-fly) during run-time
- network friendly: MiKTeX can be run directly from a shared and read-only network directory
- complete: the MiKTeX distribution contains almost all packages that are freely redistributable.
- enhanced T<sub>E</sub>X compiler capabilities
- enhanced previewer capabilities: forward/inverse DVI search, graphics, color, magnifying glass, ...
- open source: MiKTeX source code is get-at-able for everyone

The MiKTeX distribution consists of the following components:

**T<sub>E</sub>X, METAFONT, T<sub>E</sub>Xware, METAFONTware, Computer Modern Fonts**  
the base T<sub>E</sub>X system

**pdfT<sub>E</sub>X, X<sub>3</sub>T<sub>E</sub>X, Ω, N<sub>T</sub>S**  
various T<sub>E</sub>X derivatives

**METAPOST**  
a METAFONT derivative for the creation of PostScript figures

**Dvipdfm**  
converts T<sub>E</sub>X output into PDF documents

**macro packages**  
almost all free T<sub>E</sub>X macro packages

**fonts**  
almost all free fonts

---

<sup>1</sup> <[http://www.tex.ac.uk/cgi-bin/texfaq2html?label=tutorials\\*](http://www.tex.ac.uk/cgi-bin/texfaq2html?label=tutorials*)>

**Yap** a sophisticated viewer for T<sub>E</sub>X output

**T<sub>E</sub>Xify**

a T<sub>E</sub>X compiler driver

**MiK<sub>T</sub>E<sub>X</sub> Options**

assists in configuring MiK<sub>T</sub>E<sub>X</sub>

**MiK<sub>T</sub>E<sub>X</sub> Update Wizard**

assists in keeping the MiK<sub>T</sub>E<sub>X</sub> system up-to-date

**lots of utilities**

tools for the creation of bibliographies & indexes, PostScript utilities, and more

## 1.3 How to Get MiK<sub>T</sub>E<sub>X</sub>

The MiK<sub>T</sub>E<sub>X</sub> distribution can be downloaded from the Internet. And it is available on DVD-R.

### 1.3.1 Downloading MiK<sub>T</sub>E<sub>X</sub>

The MiK<sub>T</sub>E<sub>X</sub> setup program comes in two flavors:

- Basic MiK<sub>T</sub>E<sub>X</sub> Installer
- MiK<sub>T</sub>E<sub>X</sub> Net Installer

You use the Basic MiK<sub>T</sub>E<sub>X</sub> Installer to install a basic MiK<sub>T</sub>E<sub>X</sub> system. The MiK<sub>T</sub>E<sub>X</sub> Net Installer can be used to download and install a complete MiK<sub>T</sub>E<sub>X</sub> system. All this is explained later in this manual (see [Chapter 2](#), “Installing MiK<sub>T</sub>E<sub>X</sub>”).

### 1.3.2 MiK<sub>T</sub>E<sub>X</sub> on DVD-R

The MiK<sub>T</sub>E<sub>X</sub> DVD-R allows you to install MiK<sub>T</sub>E<sub>X</sub> on the hard-disk or to run the programs directly from the DVD-R.

If you wish to obtain a copy of the MiK<sub>T</sub>E<sub>X</sub> DVD-R, visit the DVD-R info page<sup>2</sup> <<http://miktex.org/dvd>>.

## 1.4 Give Back

If you enjoy MiK<sub>T</sub>E<sub>X</sub> and want to support the project, then please become an esteemed MiK<sub>T</sub>E<sub>X</sub> user by giving back something. It encourages me to continue, and is the perfect way to say thank you!

Visit the MiK<sub>T</sub>E<sub>X</sub> Give Back page<sup>3</sup> <<http://miktex.org/giveback>>, for more information.

## 1.5 The MiK<sub>T</sub>E<sub>X</sub> Project Page

The MiK<sub>T</sub>E<sub>X</sub> Project Page<sup>4</sup> <<http://miktex.org>> is the address to turn to for MiK<sub>T</sub>E<sub>X</sub> related news & information.

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<sup>2</sup> <<http://miktex.org/dvd>>

<sup>3</sup> <<http://miktex.org/giveback>>

<sup>4</sup> <<http://miktex.org>>



## 1.6 The MiKTeX Mailing List

There is a discussion list for MiKTeX users. You can join this list by visiting the MiKTeX-Users Info Page<sup>5</sup> <<http://lists.sourceforge.net/lists/listinfo/miktex-users>> and filling out the form provided there.

To see the collection of prior postings to the mailing list, browse the MiKTeX-Users Archives<sup>6</sup> <<http://sourceforge.net/mailarchive/forum.php?forum=miktex-users>>.

## 1.7 Documentation

Use the `mthelp` utility to quickly access general TeX related documentation. For example, run `mthelp memoir` to view documentation of the `memoir` package.

---

<sup>5</sup> <<http://lists.sourceforge.net/lists/listinfo/miktex-users>>

<sup>6</sup> <<http://sourceforge.net/mailarchive/forum.php?forum=miktex-users>>

## Chapter 2

# Installing MiKTeX

### 2.1 Prerequisites

MiKTeX 2.9 requires one of the following Windows operating systems:

- Windows 7
- Windows Vista with Service Pack 2 (all editions except Starter Edition)
- Windows XP with Service Pack 3 (all editions except Starter Edition)
- Windows Server 2008 R2
- Windows Server 2008 with Service Pack 2
- Windows Server 2003 R2
- Windows Server 2003 with Service Pack 2

Please note that MiKTeX 2.9 does not work on legacy Windows platforms (Windows 9x/Me/NT/2000).

### 2.2 Installing a basic MiKTeX system

Get the “Basic MiKTeX Installer” (`basic-miktex-2.9.xxxx.exe`) from the download page<sup>1</sup> <<http://miktex.org/2.9/setup>> and run it.

First you will be presented with the MiKTeX copying conditions (Figure 2.1).

Read the text carefully. Click **I accept the MiKTeX copying conditions**, if you agree.

You have the option to create a shared MiKTeX installation (Figure 2.2). Use this option if you are the administrator of your computer and if you want to install MiKTeX for all users. This option is not available if you are logged into a limited user account.

Click **Anyone who uses this computer (all users)** if you want to install MiKTeX for all users. Click **Only for ...**, if nobody else shall be able to use MiKTeX.

MiKTeX will be installed in a standard installation directory (Figure 2.3).

Click the **Browse...** button, if you want to specify another directory location.

The wizard allows you to set the preferred paper size (Figure 2.4).

You also have the option to change the default behaviour of the integrated package manager for the case where a required package is missing. Select **Ask me first**, if the package manager shall ask for permission. Select **Always**, if the package manager is always allowed to install missing packages. Select **Never**, if you disallow the installation of missing packages. All these preferences can be changed later with the help of MiKTeX Options.

Before the actual installation process begins, you get a chance to review your decisions (Figure 2.5).

---

<sup>1</sup> <<http://miktex.org/2.9/setup>>

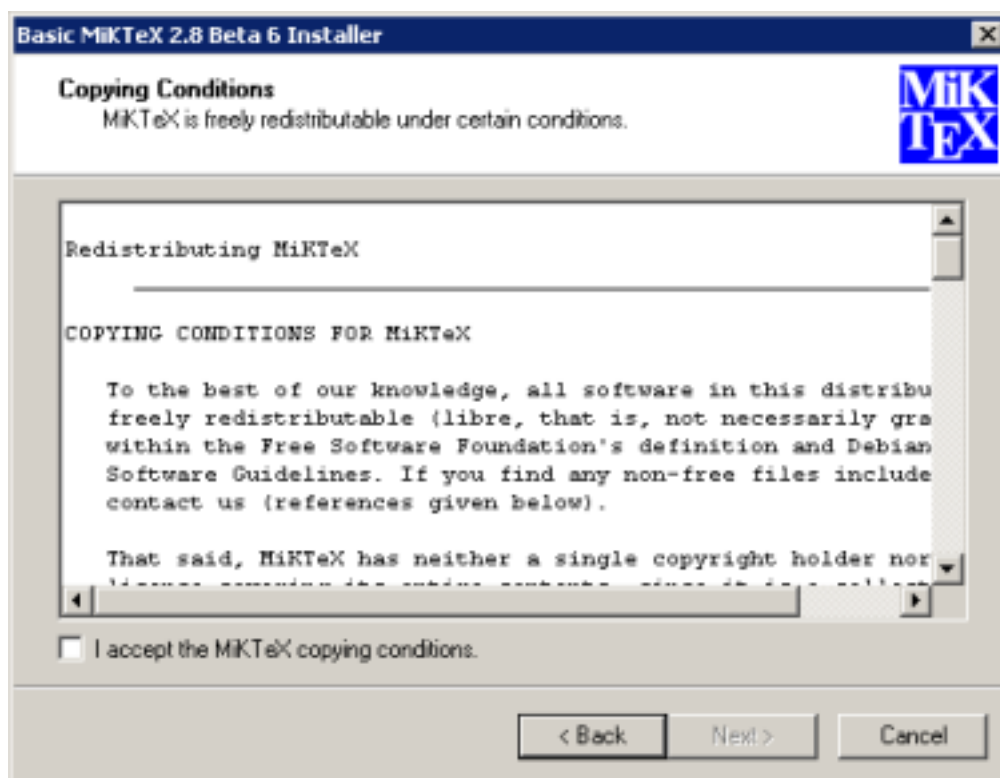


Figure 2.1: Basic MiKTeX Installer: License

If you are satisfied with the settings, click the **Start** button to start the installation. This will take a few minutes (Figure 2.6).

When the installation has finished, you can click the **Next** to open the last wizard page (Figure 2.7).

MiKTeX is now installed and you can begin using it. Click **Close**, to dismiss the setup wizard.

## 2.3 Installing a complete MiKTeX system

In order to install a complete MiKTeX system, you need the MiKTeX Net Installer. You can get it from the download page<sup>2</sup> <<http://miktex.org/2.9/setup>>.

### 2.3.1 Task #1: Download the complete MiKTeX distribution

Before you can actually install MiKTeX you have to download the MiKTeX distribution.

You can use MiKTeX Net Installer to download MiKTeX.

Alternatively, you can use a third-party download utility (e.g. **wget**) to download the contents of the CTAN directory `systems/win32/miktex/tm/packages/`.

Depending on your Internet connection, the download can take several hours to complete. If something goes wrong, you can resume the download operation by starting again.

### 2.3.2 Task #2: Install MiKTeX

Once the download operation is complete, you are ready to install MiKTeX: start MiKTeX Net Installer and choose **Install MiKTeX** as the primary setup task.

When asked for the package set, choose **Complete MiKTeX**.

<sup>2</sup> <<http://miktex.org/2.9/setup>>

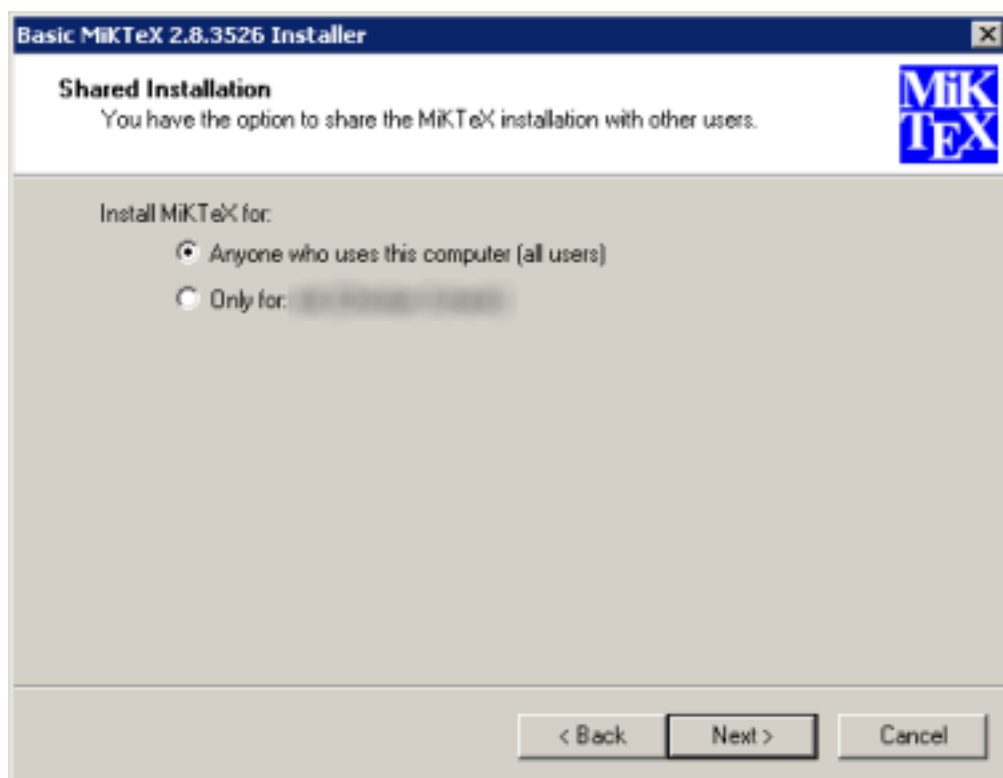


Figure 2.2: Basic MiKTeX Installer: Shared vs. private installation

When asked for the directory from where MiKTeX shall be installed, click the **Browse** button and specify the location of the MiKTeX package repository (see previous section).

## 2.4 Items in the Start Menu

MiKTeX Setup Wizard installs the following menu items in the Windows start menu:

### MiKTeX 2.9 → **Previewer**

A shortcut to the MiKTeX previewer Yap.

### MiKTeX 2.9 → **TeXworks**

A shortcut to TeXworks, an integrated development environment for T<sub>E</sub>X and L<sup>A</sup>T<sub>E</sub>X.

### MiKTeX 2.9 → **Help** → **FAQ**

Answers to frequently asked questions.

### MiKTeX 2.9 → **Help** → **Manual**

The MiKTeX manual.

### MiKTeX 2.9 → **Maintenance** → **Package Manager**

A shortcut to the MiKTeX package manager.

### MiKTeX 2.9 → **Maintenance** → **Settings**

A shortcut to MiKTeX Options.

### MiKTeX 2.9 → **Maintenance** → **Update**

A shortcut to the MiKTeX update wizard.

### MiKTeX 2.9 → **Maintenance (Admin)** → **Package Manager (Admin)**

A shortcut to the admin variant of the MiKTeX package manager.

### MiKTeX 2.9 → **Maintenance (Admin)** → **Settings (Admin)**

A shortcut to the admin variant of MiKTeX Options.

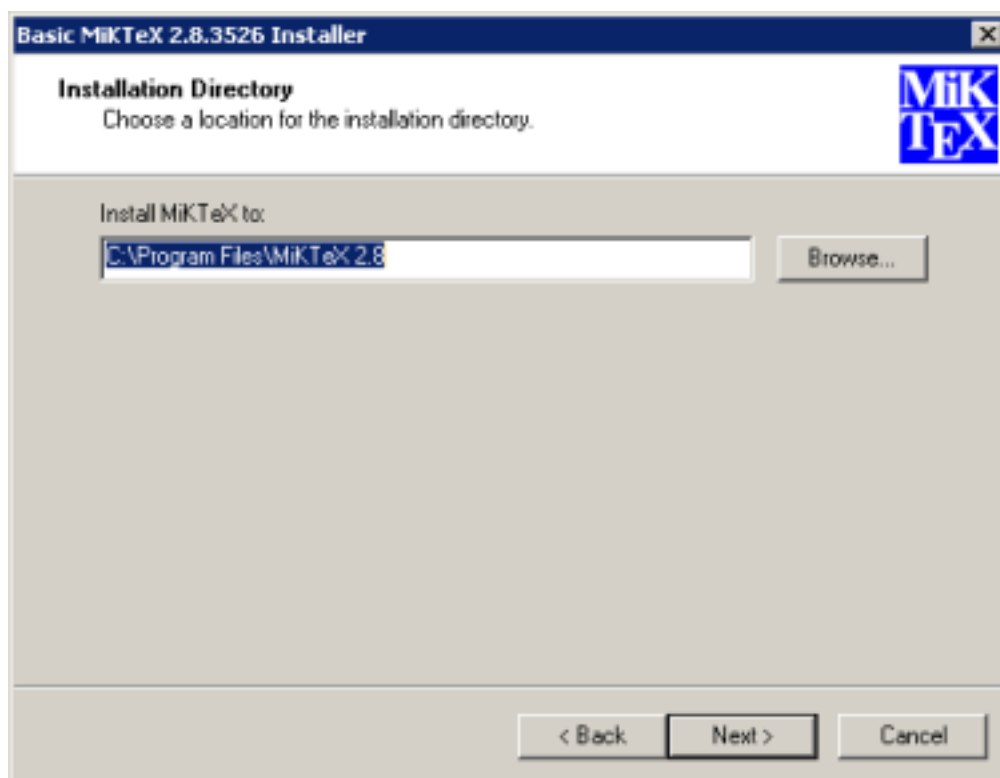


Figure 2.3: Basic MiKTeX Installer: Installation directory

**MiKTeX 2.9 → Maintenance (Admin) → Update (Admin)**

A shortcut to the admin variant of the MiKTeX update wizard.

**MiKTeX 2.9 → MiKTeX on the Web → Known Issues**

An Internet shortcut to the MiKTeX issues page.

**MiKTeX 2.9 → MiKTeX on the Web → MiKTeX Project Page**

An Internet shortcut to the MiKTeX project page.

**MiKTeX 2.9 → MiKTeX on the Web → Registration**

An Internet shortcut to the MiKTeX registration page.

**MiKTeX 2.9 → MiKTeX on the Web → Support**

An Internet shortcut to the MiKTeX support page.

## 2.5 Removing MiKTeX

MiKTeX can be removed from your computer in the following way:

1. Open Control Panel.
2. Double-click **Add or Remove Programs**.
3. Click **MiKTeX 2.9**.
4. Click **Change/Remove**.

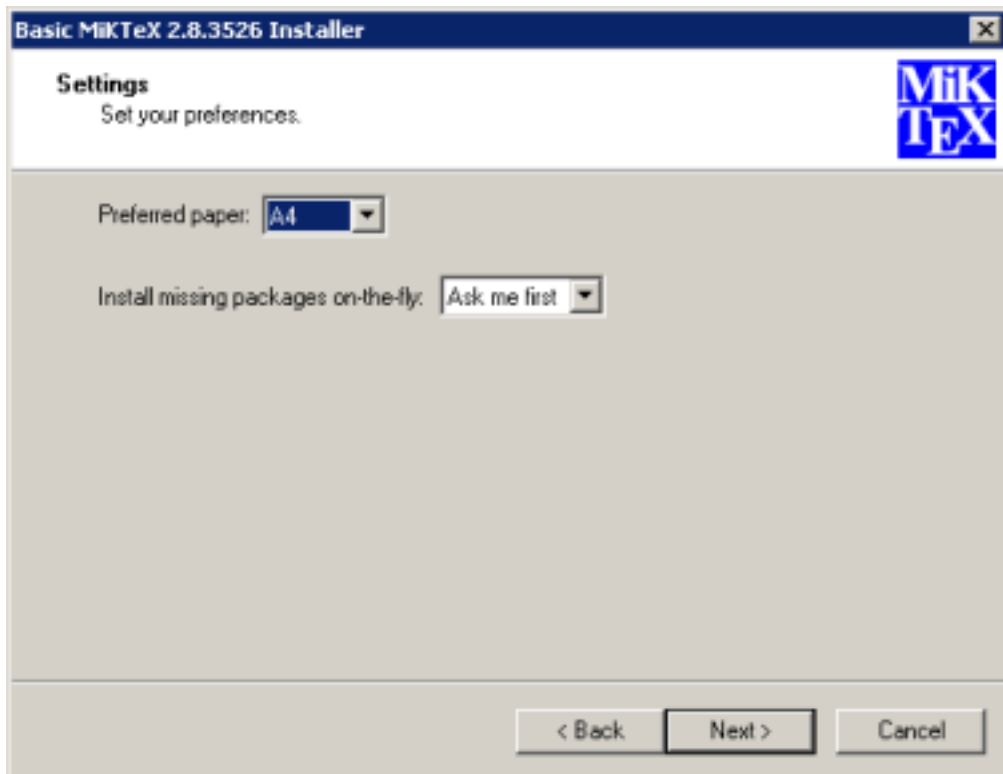


Figure 2.4: Basic MiKTeX Installer: Settings

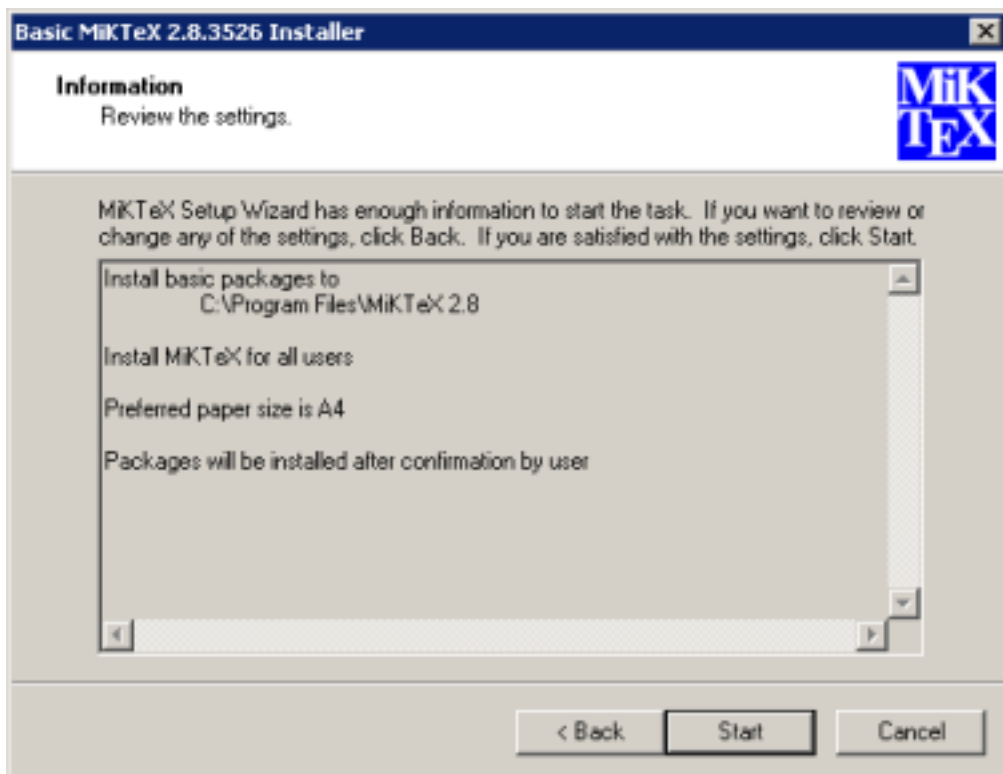


Figure 2.5: Basic MiKTeX Installer: Review

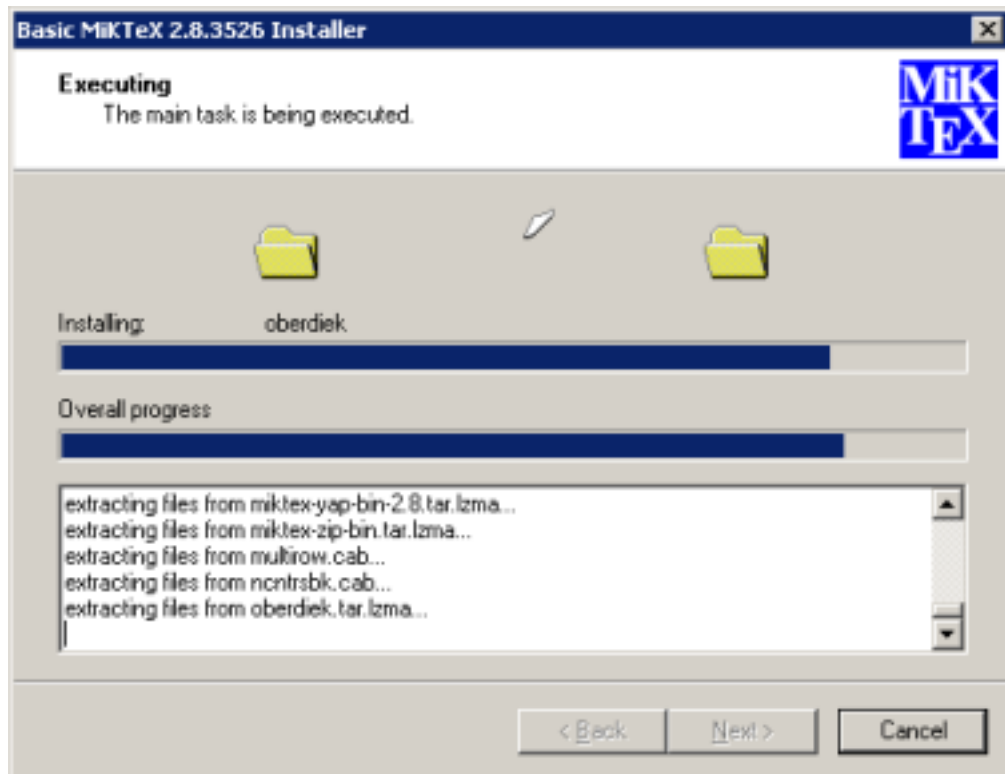


Figure 2.6: Basic MiKTeX Installer: Installation progress

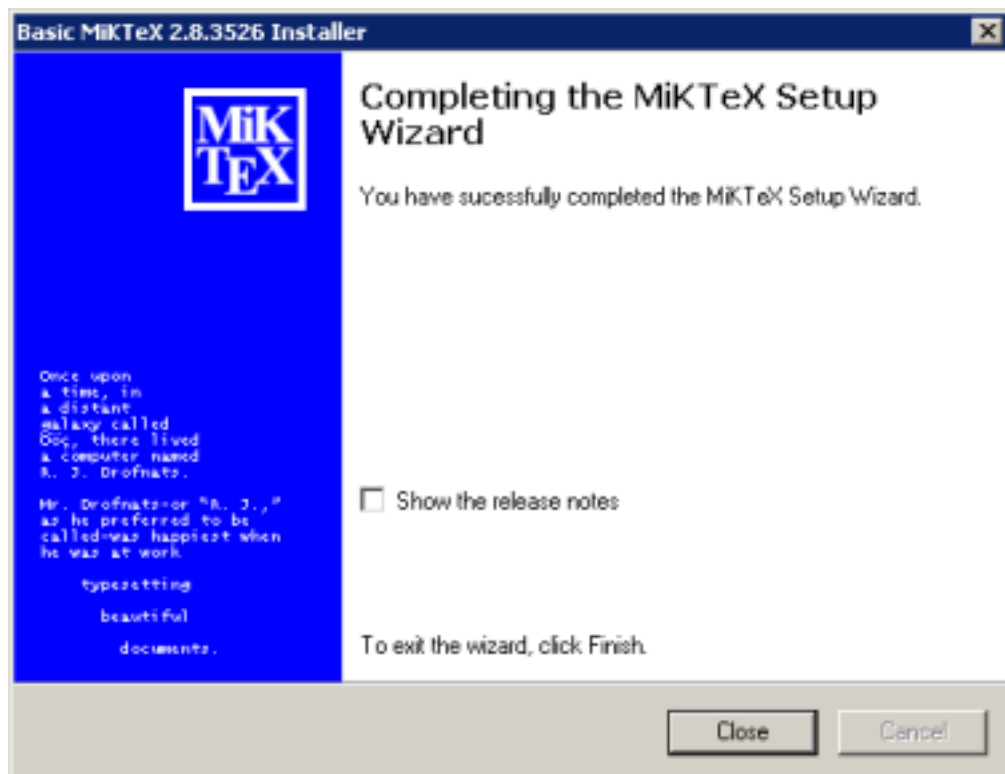


Figure 2.7: Basic MiKTeX Installer: Finish

# Chapter 3

## Using MiKTeX

### 3.1 Getting Started

If you have never used T<sub>E</sub>X before, then it is recommendable to work through one of the T<sub>E</sub>X/L<sup>A</sup>T<sub>E</sub>X tutorials. A good starting point is this entry in the UK T<sub>E</sub>X FAQ: <[http://www.tex.ac.uk/cgi-bin/texfaq2html?label=tutorials\\*](http://www.tex.ac.uk/cgi-bin/texfaq2html?label=tutorials*)>.

MiKTeX doesn't differ very much from any other T<sub>E</sub>X system you might have used before. Typesetting with MiKTeX involves these steps:

1. Start T<sub>E</sub>Xworks and edit your L<sup>A</sup>T<sub>E</sub>X document.
2. Press **Ctrl-T** to create a typeset view of your document.

### 3.2 Specialities

This section describes features that were added to the MiKTeX implementation of T<sub>E</sub>X & Friends.

#### 3.2.1 Automatic Package Installation

All MiKTeX programs can be configured in such a way that missing packages are automatically installed (see [Section 4.5](#)).

It is possible to override the global configuration setting with these command line options:

`-disable-installer`  
Missing packages will not be installed.

`-enable-installer`  
Missing packages will be installed.

#### 3.2.2 Finding out Package Usages

The command line option `-record-package-usages` can be used to find out which packages are used in a job.

For example, you would say

```
latex -record-package-usages=packages.txt test
```

to create the file `packages.txt`, which contains the names of the packages used by `test.tex`.

If `test.tex` looks like this:



```

\documentclass{scrartcl}
\begin{document}
Hello, world!
\end{document}

```

Then the resulting `packages.txt` would contain these lines:

```

cm
koma-script
ltxbase

```

The package list can be handed over to the package manager (see [mpm\(1\)](#)), e.g.

```
mpm --update-some=packages.txt
```

would ensure that you have the latest versions installed.

### 3.2.3 Suppressing Screen Output

The option `-quiet` suppresses all diagnostic messages. No screen output is produced, unless there are errors. The `-quiet` option implies `-c-style-errors` and `-interaction=batchmode`, i.e. errors will be shown in a “C style form” and do not stop the compilation process.

For example, the input file `foo.tex`

```

\documentclass{article}
\begin{document}
What's \This?
\end{documnt}

```

would cause T<sub>E</sub>X to print one error message, as in the following example:

```

> latex -quiet foo.tex
foo.tex:3: Undefined control sequence
>

```

### 3.2.4 Setting the Name of the Output File

You can change the name of all output files by using the option `-job-name=name`. This switch actually sets the name of the T<sub>E</sub>X job and has an effect of the output file names, because these names are derived from the job name. Look at the following example:

```

> latex -job-name=foo sample2e
This is TeX, Version 3.14159 (MiKTeX 2.2)
(D:\texmf\tex\latex\base\sample2e.tex
LaTeX2e <2001/06/01>
Babel <v3.7h> and hyphenation patterns for english, german, ngerman, loaded.
(D:\texmf\tex\latex\base\article.cls
Document Class: article 2001/04/21 v1.4e Standard LaTeX document class
(D:\texmf\tex\latex\base\size10.clo))
No file foo.aux.
(D:\texmf\tex\latex\base\omscmr.fd) [1] [2] [3] (foo.aux) )
Output written on foo.dvi (3 pages, 7256 bytes).
Transcript written on foo.log.
>

```

Note the altered output file names: `foo.aux`, `foo.dvi` and `foo.log`.

## 3.2.5 Auto-insertion of Source Specials

### 3.2.5.1 What Are Source Specials?

Source specials are pieces of information embedded in a DVI file. They make a connection between the source file location (e.g., “line 100 in `foo.tex`”) and the DVI location (e.g., “page 2 in `foo.dvi`”). Source specials can improve the edit-compile-view-edit cycle:

1. You edit the source file with a T<sub>E</sub>X editor.
2. You compile the source file.
3. You execute a special editor command to open the previewer Yap, going directly to the page that corresponds to the cursor location in your editor window.
4. You navigate through the viewed document.
5. You double-click somewhere inside the viewed document; this causes Yap to bring the editor window back to the front, moving the text cursor directly to the line that corresponds to the view location.

### 3.2.5.2 How to Insert Source Specials

The T<sub>E</sub>X compiler option `-src-specials` directs T<sub>E</sub>X to insert source specials into the DVI file.

You would say

```
latex -src-specials foo.tex
```

to create the DVI file `foo.dvi` with embedded source specials.

## 3.2.6 Quoted File Names

The T<sub>E</sub>X compiler can handle quoted file names. This makes it possible to specify long file names that contain spaces.

For example, to compile the input file `long file name.tex`, you start T<sub>E</sub>X as follows:

```
latex "long file name"
```

This produces the DVI file `"long file name.dvi"`. The log file is named `"long file name.log"`.

You can, to some extent, use quoted file names inside the T<sub>E</sub>X document. For example:

```
\input{"extra long file name"}
```

This would cause T<sub>E</sub>X to read the file `"extra long file name.tex"`.

Things get a little bit complicated if you want to use the L<sup>A</sup>T<sub>E</sub>X primitive `\include`. You have to write something like the following:

```
\include{"extra\space long\space file\space name"}
```

## 3.2.7 Specifying Additional Input Directories

The command-line option `-include-directory=dir` causes the program to include *dir* into the list of input directories.

For example:

```
latex --include-directory="C:\My Styles" foo.tex
```

This prepends `C:\My Styles` to the input search path, i.e., `C:\My Styles` will be searched first, when T<sub>E</sub>X tries to find an input file.

### 3.2.8 Specifying the Output Directory

The option `-output-directory=dir` causes T<sub>E</sub>X to create all output files in another directory.

For example:

```
> mkdir C:\texoutput
> latex -output-directory=C:\texoutput sample2e.tex
...
>
```

This ensures that all output files (`foo.dvi`, `foo.log`, ...) will be created in `C:\texoutput\`.

### 3.2.9 Specifying the Directory for Auxiliary Files

The option `-aux-directory=dir` causes T<sub>E</sub>X to create auxiliary files in another directory. For example:

```
> mkdir C:\texoutput
> mkdir C:\tobedeleted
> latex -output-directory=C:\texoutput -aux-directory=C:\tobedeleted foo.tex
...
>
```

This ensures that 1) `foo.dvi` will be created in `C:\texoutput\` and 2) all other files (`foo.log`, ...) will be created in `C:\tobedeleted\`.

### 3.2.10 Running Programs From Within T<sub>E</sub>X

#### 3.2.10.1 `\write18`

T<sub>E</sub>X handles output stream 18 in a special way: the token list is interpreted as a command line. If the `\write18` feature is enabled (see below), then `\write18{toklist}` starts the command interpreter (usually `cmd.exe`) to carry out the command specified by *toklist*. For example:

```
\write18{dir}
```

lists the files and sub-directories of the current directory.

#### NOTE



The `\write18` feature is only partially enabled by default to avoid security problems: only well known commands are allowed. You fully enable the feature by specifying `-enable-write18` on the T<sub>E</sub>X command-line.

#### 3.2.10.2 Piped Input and Output

T<sub>E</sub>X's input/output primitives can be used for unidirectional interprocess communication by prepending a pipe symbol to the file name.

If this feature is enabled, then `\input "|command"` starts the command interpreter (usually `cmd.exe`) to carry out the command. The output of the command becomes the input of T<sub>E</sub>X. For example:

```
\input "|dir/b"
```

typesets the file names of the current directory.

Likewise, it is possible to let T<sub>E</sub>X write something into the input stream of a command. For example:

```
\immediate\openout1 = "|unix2dos|sort > sorted"
\immediate\write 1 {b}
\immediate\write 1 {a}
\immediate\write 1 {c}
\immediate\closeout1
\input sorted
```

typesets a b c.

#### NOTE



Piped input and output is disabled by default to avoid security problems. You enable the feature by specifying `-enable-pipes` on the T<sub>E</sub>X command-line.

### 3.2.11 TCX Files: Character Translations

*This section is “borrowed” from the Web2C manual.*

TCX (T<sub>E</sub>X character translation) files help T<sub>E</sub>X support direct input of 8-bit international characters if fonts containing those characters are being used. Specifically, they map an input (keyboard) character code to the internal T<sub>E</sub>X character code (a superset of ASCII).

Of the various proposals for handling more than one input encoding, TCX files were chosen because they follow Knuth’s original ideas for the use of the `xchr` and `xord` tables. He ventured that these would be changed in the WEB source in order to adjust the actual version to a given environment. It turned out, however, that recompiling the WEB sources is not as simple task as Knuth predicted; therefore, TCX files, providing the possibility of changing of the conversion tables on on-the-fly, has been implemented instead.

This approach limits the portability of T<sub>E</sub>X documents, as some implementations do not support it (or use a different method for input-internal reencoding). It may also be problematic to determine the encoding to use for a T<sub>E</sub>X document of unknown provenance; in the worst case, failure to do so correctly may result in subtle errors in the typeset output.

While TCX files can be used with any format, using them breaks the L<sup>A</sup>T<sub>E</sub>X `inputenc` package. This is why you should either use `tcxfile` or `inputenc` in L<sup>A</sup>T<sub>E</sub>X input files, but never both.

This is entirely independent of the M<sup>L</sup>T<sub>E</sub>X extension: whereas a TCX file defines how an input keyboard character is mapped to T<sub>E</sub>X’s internal code, M<sup>L</sup>T<sub>E</sub>X defines substitutions for a non-existing character glyph in a font with a `\accent` construction made out of two separate character glyphs. TCX files involve no new primitives; it is not possible to specify that an input (keyboard) character maps to more than one character.

Specifying TCX files:

- You can specify a TCX file to be used for a particular T<sub>E</sub>X run by specifying the command-line option `-translate-file=tcxfile` or (preferably) specifying it explicitly in the first line of the main document:

```
%& -translate-file=tcxfile
```

- TCX files are searched for along the `TCXPath` path.
- `initex` ignores TCX files.

MiK<sub>T</sub>E<sub>X</sub> comes with at least two TCX files, `i11-t1.tcx` and `i12-t1.tcx`. These support ISO Latin 1 and ISO Latin 2, respectively, with Cork-encoded fonts (a.k.a.: the T1 encoding). TCX files for Czech, Polish, and Slovak are also provided.

Syntax of TCX files:

1. Line-oriented. Blank lines are ignored.
2. Whitespace is ignored except as a separator.
3. Comments start with % and continue to the end of the line.
4. Otherwise, a line consists of one or two character codes:
 

```
src [dest]
```
5. Each character code may be specified in octal with a leading 0, hexadecimal with a leading 0x, or decimal otherwise. Values must be between 0 and 255, inclusive (decimal).
6. If the *dest* code is not specified, it is taken to be the same as *src*.
7. If the same *src* code is specified more than once, it is the last definition that counts.

Finally, here's what happens: when T<sub>E</sub>X sees an input character with code *src*: it 1) changes *src* to *dest*; and 2) makes code the *dest* "printable", i.e., printed as-is in diagnostics and the log file instead of in  $\wedge\wedge$  notation.

By default, no characters are translated, and character codes between 32 and 126 inclusive (decimal) are printable. It is not possible to make these (or any) characters unprintable.

Specifying translations for the printable ASCII characters (codes 32–127) will yield unpredictable results. Additionally you shouldn't make the following characters printable:  $\wedge\wedge$ I (TAB),  $\wedge\wedge$ J (line feed),  $\wedge\wedge$ M (carriage return), and  $\wedge\wedge$ ? (delete), since T<sub>E</sub>X uses them in various ways.

Thus, the idea is to specify the input (keyboard) character code for *src*, and the output (font) character code for *dest*.

### 3.3 texify: The MiKTeX Compiler Driver

**texify** is a command-line utility that simplifies the creation of DVI (PDF) documents: **texify** automatically runs L<sub>A</sub>T<sub>E</sub>X (pdfL<sub>A</sub>T<sub>E</sub>X), MakeIndex and BibT<sub>E</sub>X as many times as necessary to produce a DVI (PDF) file with sorted indices and all cross-references resolved. To run **texify** on an input file *foo.tex*, do this:

```
texify foo.tex
```

As shown in the example above, the input file names to **texify** must include any extension (*.tex*, *.ltx*, ...).

There are several command line options you can use to control **texify** (see [texify\(1\)](#)). Here are some examples:

```
texify --clean foo.tex
```

All auxiliary files will be removed, i.e., only the output *foo.dvi* file will be left in the current folder.

```
texify --tex-option=--src foo.tex
```

Passes the option `-src` to the T<sub>E</sub>X compiler.

```
texify --run-viewer foo.tex
```

Opens the output file *foo.dvi* (unless there are compile errors).

```
texify --tex-option=--src --viewer-option="-1 -s\"200 foo.tex\" --run-viewer foo.tex
```

Compiles *foo.tex* with source file information (`-src`) and then initiates forward DVI search to open *foo.dvi* at the source special location "200 *foo.tex*". The previewer option `-1` re-uses an existing previewer window.

See the Yap manual, for a complete list of previewer options.

## 3.4 Printing

### 3.4.1 Using a Viewer to Print DVI/PDF Files

TEX output files (\*.dvi/\*.pdf) can be printed from within the viewer.

### 3.4.2 Using `mtprint` to Print DVI Files

DVI files can also be printed with the help of the command-line utility **mtprint** (MiKTeX Print Utility).

For example, run `mtprint paper` to send the DVI file `paper.dvi` to the default Windows printer.

See [mtprint\(1\)](#), for more information about **mtprint**

# Chapter 4

## Maintenance

### 4.1 Refreshing the File Name Database

To speed up file search, MiKTeX makes use of a list of known file names. This list is called the *file name database* (FNDB).

It is necessary that you refresh the file name database whenever you manually install T<sub>E</sub>X/L<sup>A</sup>T<sub>E</sub>X-related files in a user-managed TEXMF directory.

You update the file name database with the help of MiKTeX Options.

Click **Start** → **Programs** → **MiKTeX 2.9** → **Maintenance** → **Settings** to open the MiKTeX Options window (see [Figure 4.1](#)).

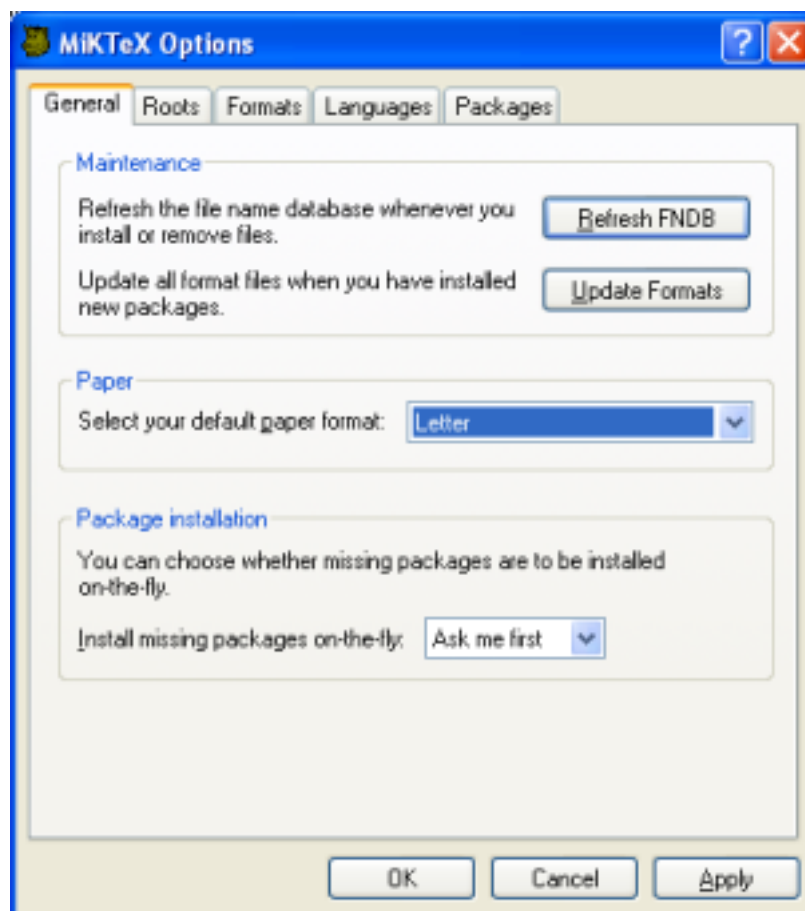


Figure 4.1: MiKTeX Options: General Settings

Click **Refresh FNDB** to refresh the file name database.

## 4.2 Setting the Preferred Paper Format

You can set the preferred paper format with the help of MiKTeX Options.

Click **Start** → **Programs** → **MiKTeX 2.9** → **Maintenance** → **Settings** to open the MiKTeX Options window (see [Figure 4.1](#)). Select your preferred paper format from the drop-down list and click **OK**.

## 4.3 Selecting Languages

You can control the loading of hyphenation patterns with the help of MiKTeX Options.

Click **Start** → **Programs** → **MiKTeX 2.9** → **Maintenance** → **Settings** to open the MiKTeX Options window (see [Figure 4.1](#)).

Click on the **Languages** tab. You will be presented with the list of available languages ([Figure 4.2](#)). Mark the languages, whose hyphenation patterns are to be loaded by the TeX engines.

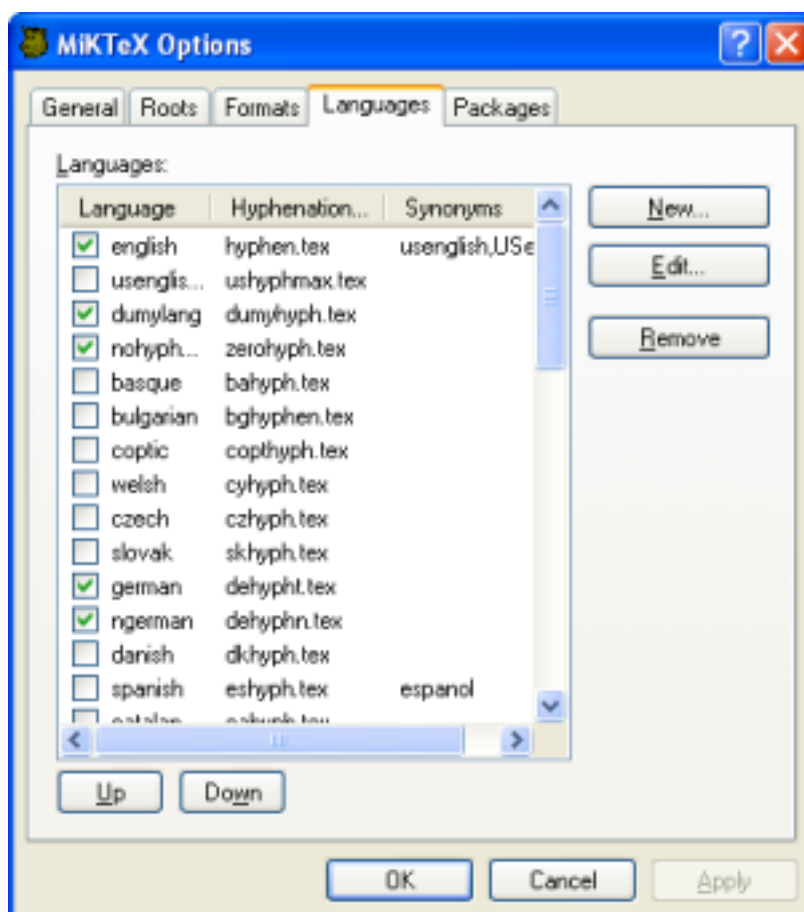
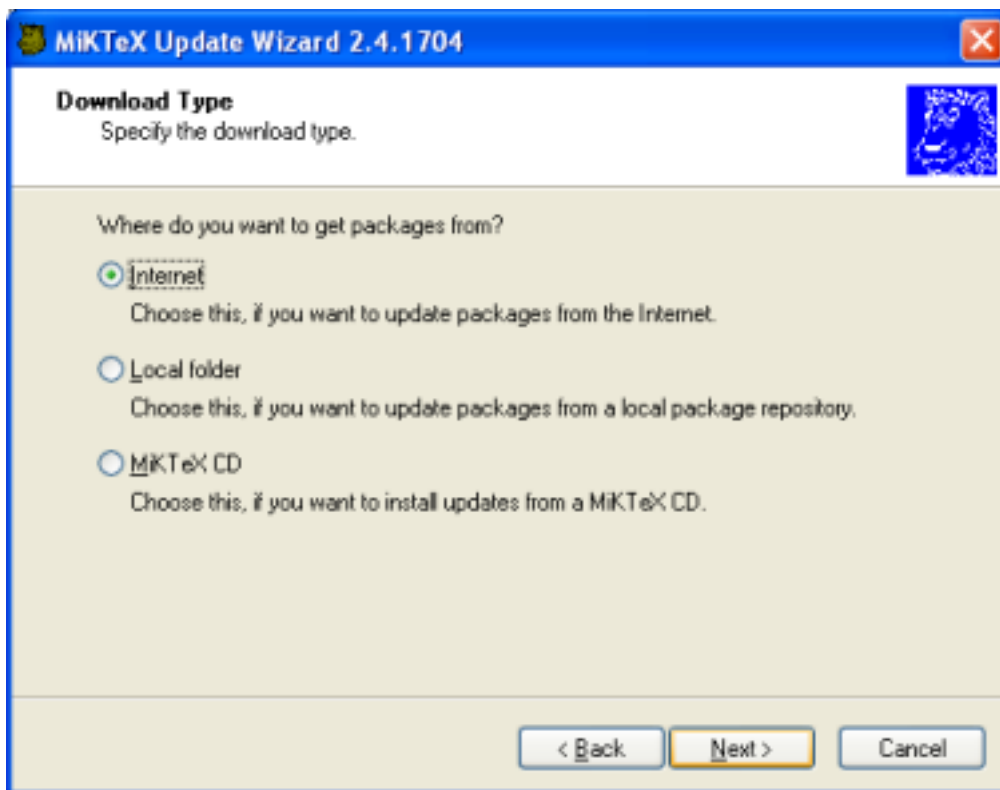


Figure 4.2: MiKTeX Options: Languages

## 4.4 Installing Updates

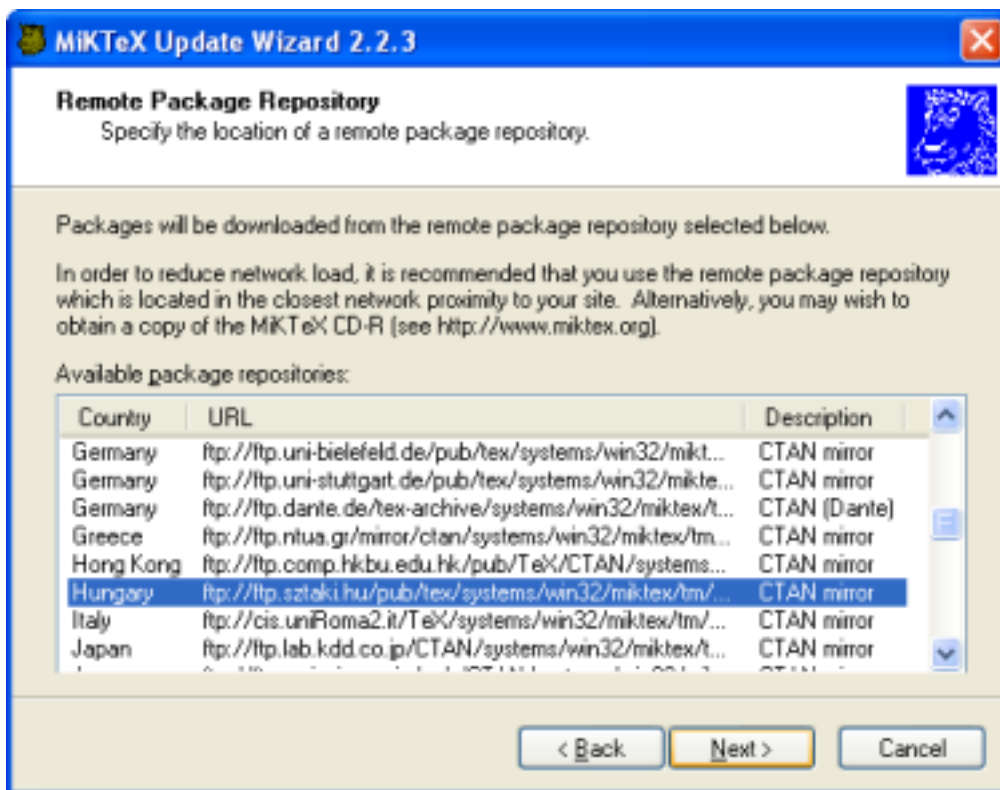
You can use the MiKTeX update wizard to install the latest MiKTeX updates. To start the wizard, click **Start** → **Programs** → **MiKTeX 2.9** → **Update**. The wizard asks you to choose an update source:





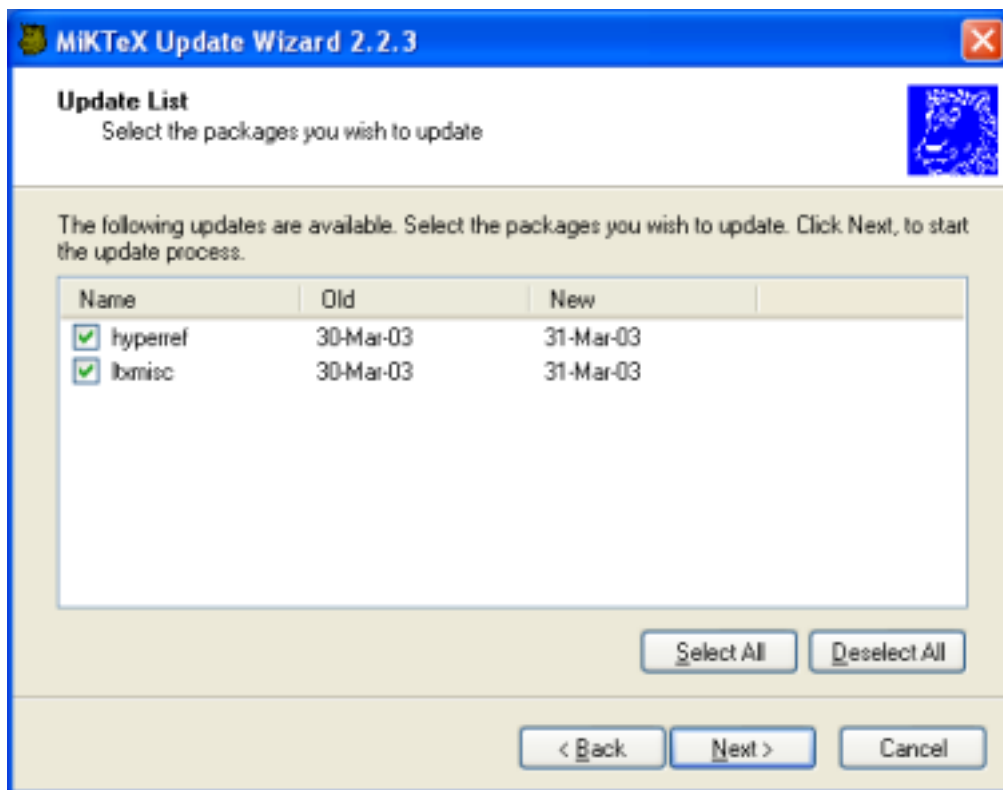
Choose to install updates from a remote package repository. Choose **Local folder**, if you are mirroring a remote package repository on your computer. Choose **MiKTeX CD**, if you have a new edition of the MiKTeX CD. Click **Next >** to continue.

If you have chosen to install packages from a remote package repository, MiKTeX Update Wizard lists the available package repositories. Choose the nearest repository:



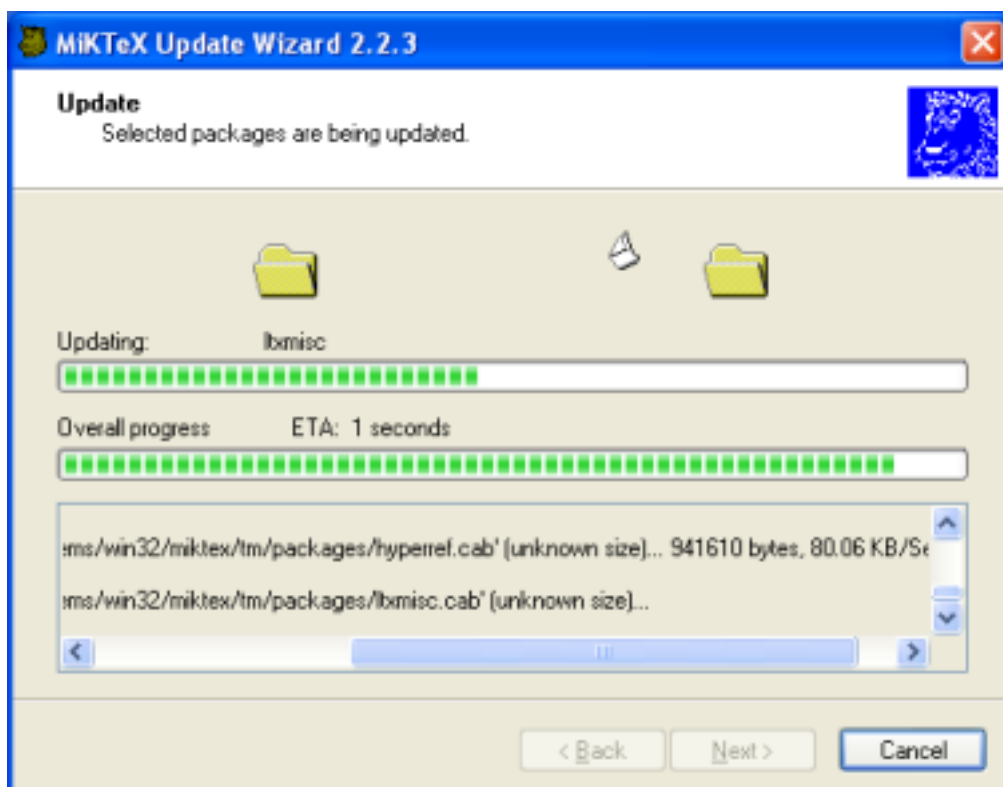
Click **Next >** to continue.

A list of updateable packages is displayed. Choose the packages you wish to update:



Click **Next** > to start the update process.

MiKTeX Update Wizard now updates the selected packages:



When the update operation is complete, click **Next** > and then **Finish**.

## 4.5 Automatic Package Installation

MiKTeX has the ability to automatically install missing packages.

MiKTeX asks your permission before installing a package (see [Figure 4.3](#)).

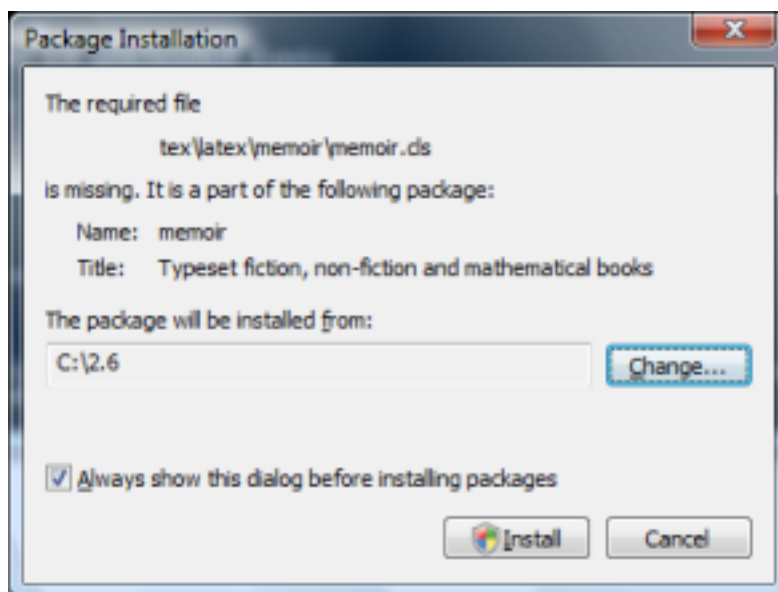


Figure 4.3: Automatic Package Installation

Click **Install** to start the installation of the package. Click **Cancel**, to cancel the installation. If you do not want to see this dialog in the future, clear the mark from the check box **Always show this dialog before installing packages**. Your decision will be remembered.

## 4.6 Integrating Local Additions

If you have files that you want to integrate into the MiKTeX setup, you have several options:

**Use the command-line option `-include-directory=dir`**

For example:

```
latex --include-directory=C:\path\to\my\style\files thesis.tex
```

See [Section 3.2.7](#), for more information.

**Set environment variables**

For example:

```
set TEXINPUTS=C:\path\to\my\style\files
latex thesis.tex
```

See [Chapter 8, "Environment variables"](#), to learn more about MiKTeX environment variables.

**Register a user-managed TEXMF directory**

Register the root of the directory tree which contains your files. The directory tree must conform to the TDS standard, i.e., you must imitate the directory tree in the MiKTeX installation directory (usually `C:\Program Files\MiKTeX 2.9`).

## TIP



This is the recommended method. The rest of this section explains how you can register your own root directory.

### 4.6.1 A Short Excursion: The T<sub>E</sub>X Directory Structure (TDS)

Here is a brief summary of the TDS standard:

- \*.afm go in *root*\fonts\afm\supplier\font
- \*.dvi, \*.ps or \*.pdf go in *root*\doc\latex\package
- \*.enc go in *root*\fonts\enc\syntax\bundle
- \*.map go in *root*\fonts\map\syntax\bundle
- \*.mf go in *root*\fonts\source\supplier\font
- \*.pfb go in *root*\fonts\type1\supplier\font
- \*.sty, \*.cls or \*.fd go in *root*\tex\latex\package
- \*.tfm go in *root*\fonts\tfm\supplier\font
- \*.ttf go in *root*\fonts\truetype\supplier\font
- \*.vf go in *root*\fonts\vf\supplier\font

Please run `mthelp tds` to learn more about the TDS.

### 4.6.2 Walkthrough: Registering a User-Managed TEXMF Directory

In this walkthrough, we assume that your own additions are located in the directory tree rooted at `C:\Local TeX Files`. This tree might look as follows:

In our example, the input files are distributed over three directories:

`C:\Local TeX Files\bibtex\bib\misc`  
Contains .bib files.

`C:\Local TeX Files\bibtex\bst\misc`  
Contains .bst files.

`C:\Local TeX Files\tex\latex\misc`  
Contains L<sup>A</sup>T<sub>E</sub>X input files (\*.sty, \*.cls, ...).

You use MiK<sub>T</sub>E<sub>X</sub> Options to register `C:\Local TeX Files`. Click **Start** → **Programs** → **MiKTeX 2.9** → **Maintenance** → **Settings** to open the MiK<sub>T</sub>E<sub>X</sub> Options window (see [Figure 4.1](#)).

Click on the **Roots** tab. The **Roots** page (see [Figure 4.5](#)) shows the list of currently registered root directories.

Click **Add**. In the following dialog box ([Figure 4.6](#)), browse to `C:\Local TeX Files` and click **OK**.

The root directory will be appended to the list ([Figure 4.7](#)).

You can move `C:\Local TeX Files` before the installation directory, if you want to prioritize your own files. Click `C:\Local TeX Files` to select the list entry. Then click **Up** to move it before the installation directory ([Figure 4.8](#)).

Click **OK** to close MiK<sub>T</sub>E<sub>X</sub> Options. The file name database will be refreshed. Your files in `C:\Local TeX Files` are now available to MiK<sub>T</sub>E<sub>X</sub>.

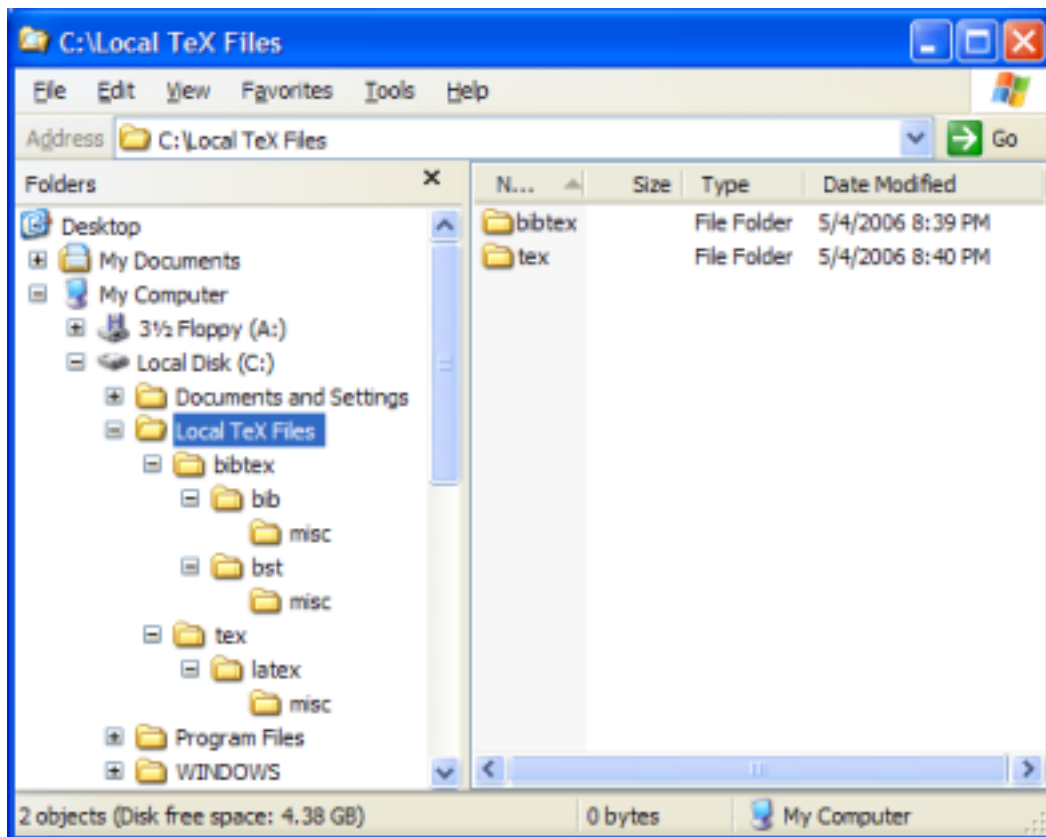


Figure 4.4: Sample TeX Directory Structure

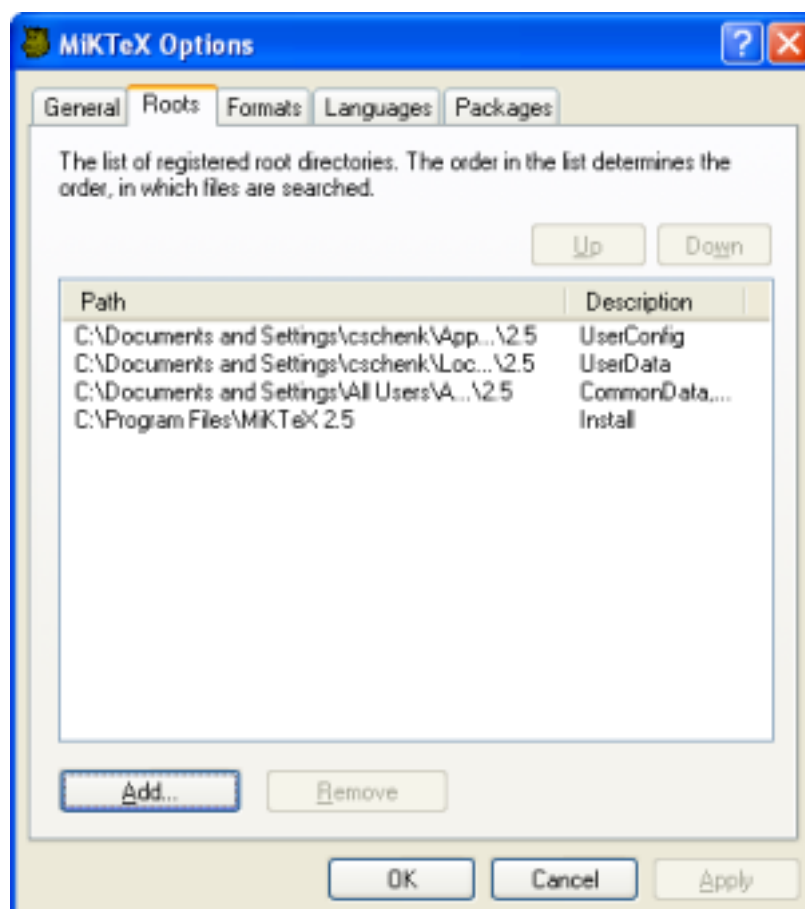


Figure 4.5: MiKTeX Options: Roots



Figure 4.6: Browsing to a Root Directory

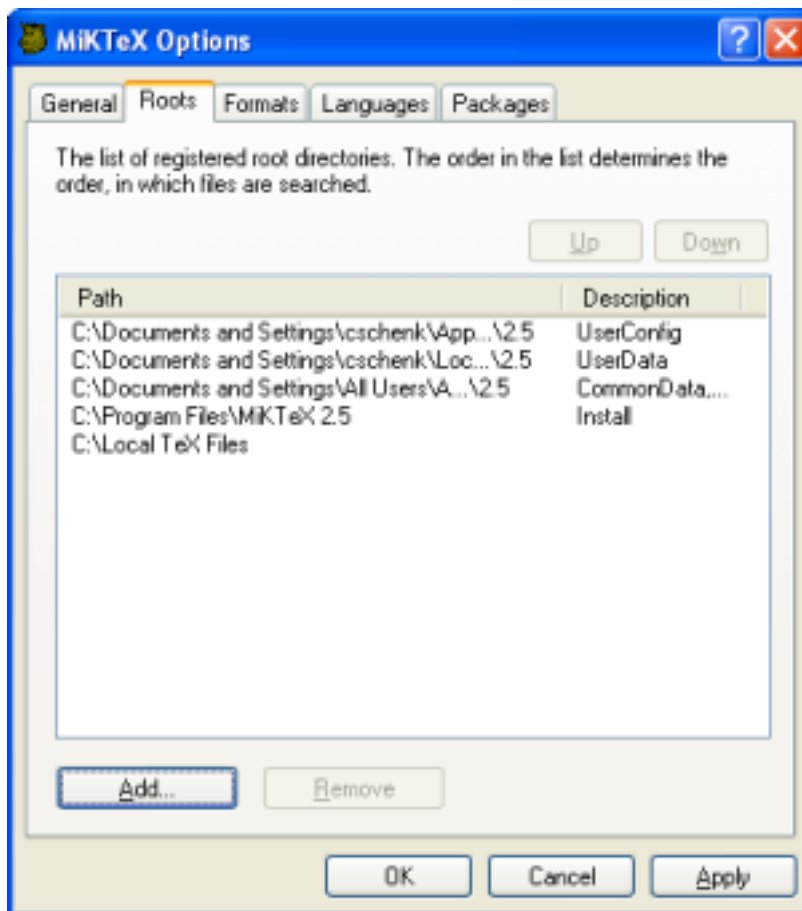


Figure 4.7: MiKTeX Options: Root Directory Added

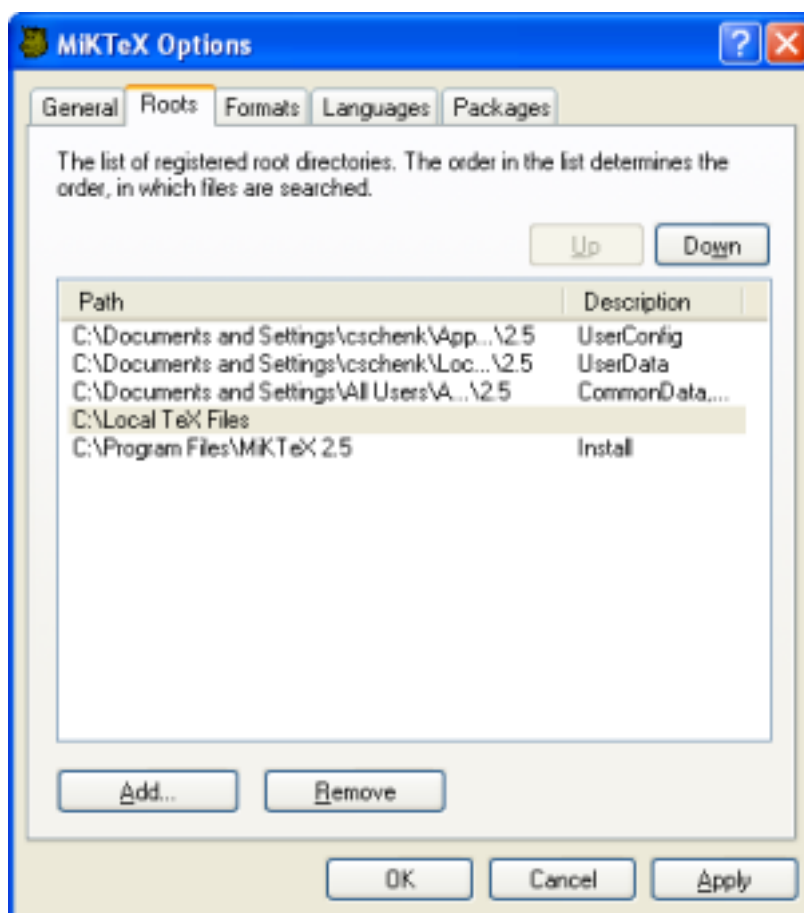


Figure 4.8: MiKTeX Options: Root Directory Moved

# Chapter 5

## Advanced Topics

### 5.1 Managing Font Map Files

Information about outline fonts is stored in a file by the name of `psfonts.map`. This file is created in the course of the setup/update process. It can be manually created by running `initexmf --mkmaps`.

`psfonts.map` depends on the file `updmap.cfg`. This configuration file contains declarative instructions (see [updmap.cfg\(5\)](#)), which will be used to build `psfonts.map`.

#### CAUTION



The contents of `psfonts.map` should never be edited directly. Your modifications get lost when you install new packages.

For example, follow these steps if you want to add an entry for the font map file `xyz.map`:

1. Run `initexmf --edit-config-file updmap`.
2. Insert the following line at the end of the file:  
`Map xyz.map`
3. Save the file and close the editor.
4. Run `initexmf --mkmaps` to rebuild the font map files.

### 5.2 Working With the Package Manager

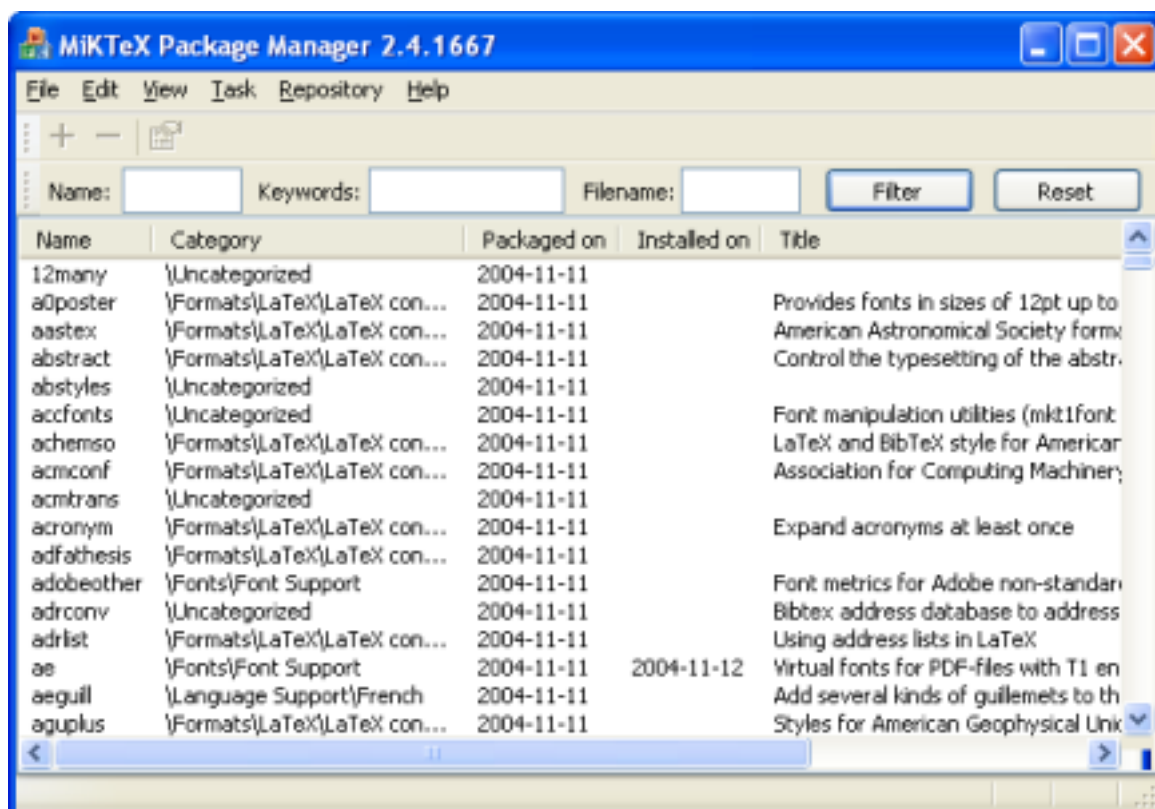
You use MiKTeX Package Manager (MPM) to install and remove packages.

The package manager can be run in two modes: batch and windowed.

MPM runs in batch mode if you specify command-line options such as `-install` and `-update` (see [mpm\(1\)](#) for a list of available command-line options).

To start the package manager in windowed mode, click **Start** → **Programs** → **MiKTeX 2.9** → **Browse Packages**). You will see a window similar to this:





### 5.2.1 Installing Packages

You install packages as follows:

1. Select all wanted packages in the list view.
2. Click on **+** to install the packages.

For example: you want to install the ConT<sub>E</sub>Xt package:

1. Locate and select the ConT<sub>E</sub>Xt package in the list view, e.g., type the key sequence **C O N T**.
2. You can now click **+** to install the package.

### 5.2.2 Searching Packages

Sometimes you don't know the name of a package, but you know the name of a file that belongs to the wanted package. In this case, enter the file name information in the file name edit control. Note that the file name information can include wildcard characters (\*?).

For example: you need to download the class file `weekly.cls`:

1. Enter `weekly.cls` in the file name edit control.
2. Click the **Filter** button.

The list view will be reduced to contain only the `calendar` package. Selecting `calendar` and pressing **+** will install the package.

## 5.3 Managing Memory Dump Files

In typical use, T<sub>E</sub>X, METAFONT and METAPOST require a large number of macros to be predefined; therefore, they support *memory dump* files, which can be read much more efficiently than ordinary source code.

For example,  $\LaTeX$  macros are stored in the file `latex.fmt`. This file is loaded by `pdfTeX`, when you start `latex`. `MiKTeX Options` can assist you in defining a new memory dump file:

Click **Start** → **Programs** → **MiKTeX 2.9** → **Maintenance** → **Settings** to open the `MiKTeX Options` window (see [Figure 4.1](#)).

Click on the **Formats** tab. You are presented with a list of known memory dump files. To add an entry to this list, click **New....**

In the **Format Definition** dialog box, enter the following information:

**Format name**

The name of the memory dump file without an extension.

**Compiler**

The program which creates and loads the memory dump file.

**Input file**

The name of the main input file.

**Preloaded format**

Optional: The name of another memory dump file, which must be loaded before the actual memory dump file is being created.

**Description**

A one-line comment which describes the new memory dump file.

A new executable file with the name of the memory dump will be installed in the `MiKTeX bin` directory. This executable serves as a short-cut for `compiler "&name"`. For example, these two commands are equivalent:

```
latex sample2e
pdftex "&latex" sample2e
```

## 5.4 Changing TEXMF run-time parameters

You can control a number of run-time parameters (in particular, array sizes) on the command-line or in a configuration file.

Some of the more interesting parameters:

**main\_memory**

Total words of memory available, for `TeX`, `METAFONT`, and `METAPOST`. You must remake the format file after changing (see [Section 5.3](#)).

**extra\_mem\_bot**

Extra space for large `TeX` data structures: boxes, glue, breakpoints, et al.

**font\_mem\_size**

Words of font info available for `TeX`.

See [Chapter 10, "TEXMF Run-Time Parameters"](#), for a complete list of the `TEXMF` run-time parameters.

Here is a typical example of a configuration file:

```
main_memory=2000000
extra_mem_bot=2000000
font_mem_size=2000000
```

The name of the configuration file is that of the engine (e.g., `pdftex`) or format (e.g., `pdflatex`). You use the `-edit-config-file` option of `initexmf` to edit the configuration file, e.g.:

```
> initexmf --edit-config-file=pdflatex
```

```
>
```

**Part II**

**Reference**

# Chapter 6

## Programs

### **bibtex**

#### **Name**

bibtex — make a bibliography for (La)TeX

#### **Synopsis**

```
bibtex [option...] [auxname]
```

#### **Description**

**bibtex** reads the top-level auxiliary (.aux) file that was output during the running of **latex** or **tex** and creates a bibliography (.bib) file that will be incorporated into the document on subsequent runs of L<sup>A</sup>T<sub>E</sub>X or T<sub>E</sub>X. The *auxname* on the command-line must be given without the .aux extension. If you don't give the *auxname*, the program prompts you for it.

**bibtex** looks up, in bibliographic database (.bib) files specified by the \bibliography command, the entries specified by the \cite and \nocite commands in the L<sup>A</sup>T<sub>E</sub>X or T<sub>E</sub>X source file. It formats the information from those entries according to instructions in a bibliography style (.bst) file (specified by the \bibliographystyle command, and it outputs the results to the .bib file.

The L<sup>A</sup>T<sub>E</sub>X reference manual explains what a L<sup>A</sup>T<sub>E</sub>X source file must contain to work with **bibtex**. Appendix B of the manual describes the format of the .bib files. The *BibTeXing* document describes extensions and details of this format, and it gives other useful hints for using **bibtex**.

#### **Options**

**-alias=app**

Pretend to be *app*, i.e., set program (and memory dump) name to *app*. This may affect the search paths and other values used. Using this option is equivalent to copying the executable file to *app.exe* and invoking *app.exe*.

**-disable-installer**

Disable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).

**-disable-pipes**

Disable input (output) from (to) child processes.

- enable-installer**  
Enable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).
- enable-pipes**  
Enable input (output) from (to) child processes.
- help**  
Give help and exit.
- hhhelp**  
This option is only available on Windows systems: show the manual page in an HTML Help window and exit when the window is closed.
- include-directory=*dir***  
Prefix *dir* to the search path.
- min-crossrefs=*n***  
Defines the minimum number of **crossrefs** required for automatic inclusion of the crossref'd entry on the citation list; the default is two.
- quiet**  
Suppress all output, except errors.
- record-package-usages=*file***  
Record all package usages and write them into *file*.
- trace[=*tracestreams*]**  
Enable trace messages. The *tracestreams* argument, if specified, is a comma-separated list of trace stream names ([Chapter 9, "Trace Streams"](#)).
- version**  
Show version information and exit.

## Environment

- BIBINPUTS**  
Extra paths to locate .bib files.
- BSTINPUTS**  
Extra paths to locate .bst files.

## See Also

- BibTeXing***  
Run `mthelp btxdoc`
- Designing BibTeX Styles***  
Run `mthelp btxhak`
- LaTeX: A Document Preparation System***  
ISBN 0-201-52983-1

## dvicopy

### Name

dvicopy — produce modified copy of DVI file

## Synopsis

```
dvicopy [option...] indvi outdvi
```

## Description

**dvicopy** reads a DVI file, expands any references to virtual fonts to base fonts, and writes the resulting DVI file. Thus you can use virtual fonts even if your DVI processor does not support them, by passing the documents through **dvicopy** first.

## Options

### **-alias=app**

Pretend to be *app*, i.e., set program (and memory dump) name to *app*. This may affect the search paths and other values used. Using this option is equivalent to copying the executable file to *app.exe* and invoking *app.exe*.

### **-disable-installer**

Disable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).

### **-disable-pipes**

Disable input (output) from (to) child processes.

### **-enable-installer**

Enable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).

### **-enable-pipes**

Enable input (output) from (to) child processes.

### **-help**

Give help and exit.

### **-hhelp**

This option is only available on Windows systems: show the manual page in an HTML Help window and exit when the window is closed.

### **-include-directory=dir**

Prefix *dir* to the search path.

### **-mag=mag**

Override existing magnification with *mag*.

### **-max-pages=n**

Process *n* pages; default one million. This option cannot be used together with **-select**.

### **-page-start=page-spec**

Start at *page-spec*, for example 2 or 5.\*.-2. This option cannot be used together with **-select**.

### **-record-package-usages=file**

Record all package usages and write them into *file*.

### **-select=sel**

Select pages to be copied.

The syntax for *sel* is: *start* [*n*], where *start* is the starting page specification (for example 2 or 5.\*.-2) and *n* (optional) is the maximum number of pages to be copied.

You can use up to 10 **-select** options. This option cannot be used together with **-max-pages** or **-page-start**.

### **-trace[=tracestreams]**

Enable trace messages. The *tracestreams* argument, if specified, is a comma-separated list of trace stream names ([Chapter 9](#), “Trace Streams”).

**-version**

Show version information and exit.

## dvips

### Name

dvips — convert a DVI file to PostScript

### Synopsis

dvips [*option...*] *dvi*file

### Description

**dvips** takes a DVI file produced by T<sub>E</sub>X (or by some other processor such as **gftodvi**) and converts it to PostScript. The DVI file may be specified without the `.dvi` extension.

### Options

Many of the parameterless options listed here can be turned off by suffixing the option with a zero (0); for instance, to turn off page reversal, use `-r0`. Such options are marked with a trailing `*`.

- a\*** Conserve memory by making three passes over the DVI file instead of two and only loading those characters actually used.
  
- A** Print only the odd pages. This option uses T<sub>E</sub>X page numbers, not physical page numbers.
  
- b** *num*  
Generate *num* copies of each page, but duplicating the page body rather than using the `/#copies` PostScript variable. This can be useful in conjunction with a header file setting **bop-hook** to do color separations or other neat tricks.
  
- B** Print only the even pages. This option uses T<sub>E</sub>X page numbers, not physical page numbers.
  
- c** *num*  
Generate *num* consecutive copies of every page, i.e., the output is uncollated. This merely sets the builtin PostScript variable `/#copies`.
  
- C** *num*  
Generate *num* copies, but collated (by replicating the data in the PostScript file). Slower than the `-c` option, but easier on the hands, and faster than resubmitting the same PostScript file multiple times.
  
- d** *num*  
Set the debug flags, showing what Dvips (thinks it) is doing. See the Dvips manual, for the possible values of *num*. Use `-d -1` as the first option for maximum output.
  
- D** *num*  
Set both the horizontal and vertical resolution to *num*, given in dpi (dots per inch). This affects the choice of bitmap fonts that are loaded and also the positioning of letters in resident PostScript fonts. Must be between 10 and 10000. This affects both the horizontal and vertical resolution. If a high resolution (something greater than 400 dpi, say) is selected, the `-Z` flag should probably also be used. If you are using fonts made with METAFONT, such as Computer Modern, **makepk** needs to know about the value for *num* that you use or METAFONT will fail. See the file `modes.mf` for a list of resolutions and mode names for most devices.

**-e num**

Maximum drift in pixels of each character from its 'true' resolution-independent position on the page. The default value of this parameter is resolution dependent (it is the number of entries in the list [100, 200, 300, 400, 500, 600, 800, 1000, 1200, 1600, 2000, 2400, 2800, 3200, ...] that are less than or equal to the resolution in dots per inch). Allowing individual characters to 'drift' from their correctly rounded positions by a few pixels, while regaining the true position at the beginning of each new word, improves the spacing of letters in words.

**-E\*** Generate an EPSF file with a tight bounding box. This only looks at marks made by characters and rules, not by any included graphics. In addition, it gets the glyph metrics from the TFM file, so characters that print outside their enclosing TFM box may confuse it. In addition, the bounding box might be a bit too loose if the character glyph has significant left or right side bearings. Nonetheless, this option works well enough for creating small EPSF files for equations or tables or the like. (Of course, **dvips** output, especially when using bitmap fonts, is resolution-dependent and thus does not make very good EPSF files, especially if the images are to be scaled; use these EPSF files with care.) For multiple page input files, also specify **-i** to get each page as a separate EPSF file; otherwise, all the pages are overlaid in the single output file.

**-f\*** Read the DVI file from standard input and write the PostScript to standard output. The standard input must be seekable, so it cannot be a pipe. If your input must be a pipe, write a shell script that copies the pipe output to a temporary file and then points **dvips** at this file. It turns off the automatic sending of control-D if it was turned on with the **-F** option or in the configuration file; use **-F** after the **-f** to send it anyway.

**-F\*** Write control-D (ASCII code 4) as the very last character of the PostScript file. This is useful when **dvips** is driving the printer directly instead of working through a spooler, as is common on personal systems. On systems shared by more than one person, this is not recommended.

**-G** Shift low chars to higher pos.

**-h name**

Prepend *name* as an additional header file, or, if *name* is -, suppress all header files. Any definitions in the header file get added to the PostScript userdict.

**-i\*** Make each section be a separate file; a *section* is a part of the document processed independently, most often created to avoid memory overflow. The filenames are created replacing the suffix of the supplied output file name by a three-digit sequence number. This option is most often used in conjunction with the **-S** option which sets the maximum section length in pages; if **-i** is specified and **-S** is not, each page is output as a separate file. For instance, some phototypesetters cannot print more than ten or so consecutive pages before running out of steam; these options can be used to automatically split a book into ten-page sections, each to its own file.

**-I imageoptions**

Specify image options:

**1, 2, 3**

Select PostScript level 1, 2 or 3.

**c, g**

Use **c** if you have a color printer or **g** for conversion to grayscale. Color printing requires PostScript level 2 or higher.

**f, r, 8, h**

Use **f** to get flate encoding (requires PostScript level 3), **r** to get run-length-encoding (requires PostScript level 2), **8** to get ASCII85-encoding instead ASCII-Hex-encoding (requires PostScript level 2) or **h** to use ASCII-Hex-encoding.

Flate encoding, run-length-encoding and one from ASCII85- or ASCII-Hex-encoding can be used combined.



- d** Use **d** to turn draft mode on. Bitmap images are not printed, only the place is marked.
- a, o, t, l, m, s,**  
To convert an alpha channel into an EPS level 3 masked bitmap use the **a** option. By use of **o** you can specify the alpha channel expresses opacity (default), **t** specifies transparency. Normally only pixels with 0 opacity are masked, all others are drawn. The alternative behaviour is to draw only pixels with full opacity and mask all others, this can be reached by option **l**.
- Option **m** advises the program to mix foreground and background color for a pixel depending on its alpha value.
- You can specify a background color like 128,255,128 for light green. The color specification must appear after the **a** option. Normally this background color is used only if there is no background color chunk in the file. Option **s** gives this command line background color higher priority than the background color from chunk.
- j\*** Download only needed characters from Type 1 fonts. This is the default. Some debugging flags trace this operation. You can also control partial downloading on a per-font basis (by editing `updmap.cfg`). See [Section 5.1](#).
- k\*** Print crop marks. This option increases the paper size (which should be specified, either with a paper size special or with the **-T** option) by a half inch in each dimension. It translates each page by a quarter inch and draws cross-style crop marks. It is mostly useful with typesetters that can set the page size automatically. This works by downloading `crop.pro`.
- K\*** Remove comments in included PostScript graphics, font files, and headers; only necessary to get around bugs in spoolers or PostScript post-processing programs. Specifically, the **%%Page** comments, when left in, often cause difficulties. Use of this flag can cause other graphics to fail, however, since the PostScript header macros from some software packages read portion the input stream line by line, searching for a particular comment.
- l [=] num**  
The last page printed will be the first one numbered *num*. Default is the last page in the document. If *num* is prefixed by an equals sign, then it (and the argument to the **-p** option, if specified) is treated as a physical (absolute) page number, rather than a value to compare with the  $\TeX$  `\count0` values stored in the DVI file. Thus, using **-l =9** will end with the ninth page of the document, no matter what the pages are actually numbered.
- m\*** Specify manual feed, if supported by the output device.
- M\*** Turns off automatic font generation.
- n num**  
Print at most *num* pages. Default is 100000.
- N\*** Turns off generation of structured comments such as **%%Page**; this may be necessary on some systems that try to interpret PostScript comments in weird ways, or on some PostScript printers. Beware: This also disables page movement, etc., in PostScript viewers such as GSview.
- o name**  
Send output to the file *name*. If **-o** is specified without *name*, the default is `file.ps` where the input DVI file was `file.dvi`. If **-o** isn't given at all, the configuration file default is used.
- If *name* is **-**, output goes to standard output. If the first character of *name* is **!** or **|**, then the remainder will be used as an argument to `popen`; thus, specifying `|lpr` as the output file will automatically queue the file for printing as usual. **dvips** will print to the local printer device PRN when *name* is `|lpr` and a program by that name cannot be found.
- o** turns off the automatic sending of control-D. See the **-f** option for how to override this.

**-O *x-offset,y-offset***

Move the origin by *x-offset,y-offset*, a comma-separated pair of dimensions such as `.1in,-.3cm`. The origin of the page is shifted from the default position (of one inch down, one inch to the right from the upper left corner of the paper) by this amount. This is usually best specified in the printer-specific configuration file.

This is useful for a printer that consistently offsets output pages by a certain amount. You can use the file `testpage.tex` to determine the correct value for your printer. Be sure to do several runs with the same 0 value—some printers vary widely from run to run.

If your printer offsets every other page consistently, instead of every page, your best recourse is to use **bop-hook** (see the Dvips manual for more information).

**-p [=] *num***

The first page printed will be the first one numbered *num*. Default is the first page in the document. If *num* is prefixed by an equals sign, then it (and the argument to the `-l` option, if specified) is treated as a physical (absolute) page number, rather than a value to compare with the  $\TeX$  `\count0` values stored in the DVI file. Thus, using `-p =3` will start with the third page of the document, no matter what the pages are actually numbered.

**-pp *first-last***

Print pages *first* through *last*; equivalent to `-p first -l last`, except that multiple `-pp` options accumulate, unlike `-p` and `-l`. The `-` separator can also be `:`.

**-P *printer***

Read the configuration file `config.printer`, which can set the output name (most likely `o|1pr` `-Pprinter`), resolution, METAFONT mode, and perhaps font paths and other printer-specific defaults. It works best to put sitewide defaults in the one master `config.ps` file and only things that vary printer to printer in the `config.printer` files; `config.ps` is read before `config.printer`.

**-q\*** Run quietly. Don't chatter about pages converted, etc. to standard output; report no warnings (only errors) to standard error.

**-r\*** Output pages in reverse order. By default, page 1 is output first.

**-R** Run securely. This disables shell command execution in `\special` (via `'`) and config files (via the `E`), pipes as output files, and opening of any absolute filenames.

**-s\*** Enclose the output in a global save/restore pair. This causes the file to not be truly conformant, and is thus not recommended, but is useful if you are driving a deficient printer directly and thus don't care too much about the portability of the output to other environments.

**-S *num***

Set the maximum number of pages in each "section". This option is most commonly used with the `-i` option; see its description above for more information.

**-t *papertype***

Set the paper type to *papertype*, usually defined in one of the configuration files, along with the appropriate PostScript code to select it. You can also specify a *papertype* of `landscape`, which rotates a document by 90 degrees. To rotate a document whose paper type is not the default, you can use the `-t` option twice, once for the paper type, and once for `landscape`.

**-T *hsize,vsize***

Set the paper size to (*hsize,vsize*), a comma-separated pair of dimensions such as `.1in,-.3cm`. It overrides any paper size special in the DVI file.

**-u *name***

Examine *name* for PostScript font aliases. Default is `psfonts.map`. This option allows you to specify different resident fonts that different printers may have. If *name* starts with a `+` character, then the rest of the name (after any leading spaces) is used as an additional map file.

- U\* Disable a PostScript virtual memory-saving optimization that stores the character metric information in the same string that is used to store the bitmap information. This is only necessary when driving the Xerox 4045 PostScript interpreter, which has a bug that puts garbage on the bottom of each character. Not recommended unless you must drive this printer.
  
- V\* Download non-resident PostScript fonts as bitmaps. This requires use of `makepk` to generate the required bitmap fonts. The bitmap must be put into `psfonts.map` as the downloadable file for that font. This is useful only for those fonts for which you do not have real outlines, being downloaded to printers that have no resident fonts, i.e., very rarely.
  
- x *num*  
Set the x magnification ratio to *num*/1000. Overrides the magnification specified in the DVI file. Must be between 10 and 100000. It is recommended that you use standard magstep values (1095, 1200, 1440, 1728, 2074, 2488, 2986, and so on) to help reduce the total number of PK files generated. *num* may be a real number, not an integer, for increased precision.
  
- X *num*  
Set the horizontal resolution in dots per inch to *num*.
  
- y *num*  
Set the y magnification ratio to *num*/1000. See -x above.
  
- Y *num*  
Set the vertical resolution in dots per inch to *num*.
  
- z\* Pass `html` hyperdvi specials through to the output for eventual distillation into PDF. This is not enabled by default to avoid including the header files unnecessarily, and use of temporary files in creating the output.
  
- Z\* Compress bitmap fonts in the output file, thereby reducing the size of what gets downloaded. Especially useful at high resolutions or when very large fonts are used. May slow down printing, especially on early 68000-based PostScript printers. Generally recommend today, and can be enabled in the configuration file.

## See Also

### *Dvips: A DVI-to-PostScript Translator*

Run `mthelp dvips`

## findtexmf

### Name

findtexmf — find MiKTeX files

### Synopsis

```
findtexmf [option...] file...
```

### Description

**findtexmf** can be used to find MiKTeX related files. When the `-file-type` option is not given, the search path used when looking for a file is inferred from the name given, by looking for a known extension. If no known extension is found, the search path for TeX source files is used.

## Options

- alias=*app***  
Pretend to be *app* when finding files.
- help**  
Give help and exit.
- file-type=*filetype***  
Use the specified file type (see below).
- must-exist**  
Install missing packages, if necessary.
- show-path=*filetype***  
Output search path for the specified file type (see below).
- start**  
Start the associated program, if the file was found.
- the-name-of-the-game=*name***  
Set the name of the program. Relevant when searching for format files.
- version**  
Show version information and exit.

## File Types

afm (.afm)  
base (.base)  
bib (.bib)  
bst (.bst)  
cid maps (.cid;.cidmap)  
clua (.dll;.so)  
cnf (.cnf)  
cweb (.w)  
dvi (.dvi)  
enc (.enc)  
exe (.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC)  
font feature files (.fea)  
fmt (.fmt)  
hbf (.hbf)  
graphic/figure (.eps;.epsi;.png)  
gf (.gf)  
ist (.ist)  
lig files (.lig)  
lua (.luc;.luctex;.texluc;.lua;.luatex;.texlua)  
map (.map)  
mem (.mem)  
mf (.mf)  
mfpool (.pool)  
mft (.mft)  
mlbib (.mlbib;.bib)  
mlbst (.bst)  
mp (.mp)  
mppool (.pool)  
ocp (.ocp)  
ofm (.ofm;.tfm)  
opl (.opl)  
opentype fonts (.otf)  
otp (.otp)  
ovf (.ovf)

```
ovp (.ovp)
perlscript (.pl)
pk (.pk)
PostScript header (.pro;.enc)
subfont definition files (.sfd)
tcx (.tcx)
tex (.tex)
texpool (.pool)
TeX system documentation (.chm;.dvi;.html;.txt;.pdf;.ps)
tfm (.tfm)
truetype fonts (.ttf;.ttc)
type1 fonts (.pfb;.pfa)
type42 fonts (.t42)
vf (.vf)
web (.web)
Windows command script file (.bat;.cmd)
```

## gftodvi

### Name

gftodvi — make proof sheets from generic font files

### Synopsis

```
gftodvi [option...] [gffile]
```

### Description

The **gftodvi** program converts a generic font (GF) file output by, for example, METAFONT, to a device independent (DVI) file (that can then be typeset using the same software that has already been written for). The characters in the GF file will appear one per page, with labels, titles, and annotations as specified in Appendix H (Hardcopy Proofs) of *The METAFONTbook*.

**gftodvi** uses other fonts in addition to the main GF file. A “gray” font is used to typeset the pixels that actually make up the character. (We wouldn’t want all the pixels to be simply black, since then labels, key points, and other information would be lost.) A “title” font is used for the information at the top of the page. A “label” font is used for the labels on key points of the figure. A “slant” font is used to typeset diagonal lines, which otherwise have to be simulated using horizontal and vertical rules. The default gray, title, and label fonts are *gray*, *cmr8*, and *cmitt10*, respectively; there is no default slant font.

To change the default fonts, you can give special commands in your source file, or you can change the fonts on the command-line.

The GF file name on the command-line must be complete. (The program prompts you for it if you don’t give it.) Because the resolution is part of the extension, it would not make sense to append a default extension as is done with other DVI-reading software. The output file name defaults to the same root as the GF file, with the *.dvi* extension added. For example, the input file *cmr10.2602gf* would become *cmr10.dvi*.

### Options

**-alias=*app***

Pretend to be *app*, i.e., set program (and memory dump) name to *app*. This may affect the search paths and other values used. Using this option is equivalent to copying the executable file to *app.exe* and invoking *app.exe*.

- disable-installer**  
Disable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).
- enable-installer**  
Enable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).
- gray-font=font**  
Sets the “gray” font. Default is gray.
- help**  
Give help and exit.
- hhelp**  
This option is only available on Windows systems: show the manual page in an HTML Help window and exit when the window is closed.
- include-directory=dir**  
Prefix *dir* to the search path.
- label-font=font**  
Sets the “label” font. Default is cmtt10.
- logo-font=font**  
Sets the “logo” font. Default is logo8.
- overflow-label-offset=real**  
Specifies the distance from the right edge of the character bounding box at which the overflow equations (if any) are typeset. The value is given in points. The default is a little over two inches.
- record-package-usages=file**  
Record all package usages and write them into *file*.
- slant-font=font**  
Sets the “slant” font. There is no default.
- title-font=font**  
Sets the “title” font. Default is cmr8.
- trace[=tracestreams]**  
Enable trace messages. The *tracestreams* argument, if specified, is a comma-separated list of trace stream names ([Chapter 9, “Trace Streams”](#)).
- version**  
Show version information and exit.

## Documentation

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## initexmf

### Name

initexmf — MiKTeX configuration utility

### Synopsis

initexmf [*option...*]

## Description

`initexmf` is used to configure MiKTeX.

## User mode vs. administrative mode

This utility can be run in two modes:

### User mode (default)

Only user related MiKTeX configuration and data files are modified.

### Administrative mode

Only system-wide MiKTeX configuration and data files are modified. The utility should be run as the system administrator.

By default, the utility runs in user mode. You can turn on administrative mode with the `-admin` option. For example, if you want to update the system-wide file name database, you invoke the utility as follows:

```
initexmf --admin --update-fndb
```

## Options

### `-admin`

Run in administrative mode.

### `-configure`

This option is only available on UNIX system-like platforms. Configure MiKTeX:

- `kpsewhich` is run to find existing TEXMF trees; the information is written to `/var/lib/miktex-texmf/miktex/config/miktexstartup.ini`, if administrative mode is turned on; otherwise the information is written to `~/.miktex/miktex/config/miktexstartup.ini`
- the system-wide (per-user) file name database is created, if administrative mode is turned on (off)

### `-dump`

Create all memory dump files.

### `-dump=key`

Dump the specified memory dump file.

### `-edit-config-file=configfile`

Open the specified config file in an editor.

### `-force`

Force `-mklinks` to overwrite existing executables.

### `-list-modes`

List all known METAFONT modes.

### `-mklinks`

Create an executable for each known format.

### `-mkmaps`

Build the font map files.

### `-print-only`

Print what would be done. Nothing is changed.

### `-quiet`

Suppress screen output.

### `-register-root=dir`

Register a TEXMF root directory.

### `-report`

Write a MiKTeX configuration report.

`-unregister-root=dir`

Unregister a TEXMF root directory.

`-update-fndb`

Refresh the whole file name database.

`-update-fndb=dir`

Refresh the file name database for a specific TEXMF tree.

`-verbose`

Print information on what is being done.

`-version`

Print the version number and exit.

## See also

MiKTeX Project Page<sup>1</sup> <<http://www.miktex.org>>

## mf

### Name

mf — METAFONT, a language for font and logo design

### Synopsis

```
mf [option...] [command | file]
```

### Description

METAFONT reads the program in the specified files and outputs font rasters (in GF format) and font metrics (in TFM format). The METAFONT language is described in *The METAFONTbook*.

Like T<sub>E</sub>X, METAFONT is normally used with a large body of precompiled macros, and font generation in particular requires the support of several macro files. METAFONT looks at its command line to see what name it was called under. Both **inimf** and **virmf** are linked to the **mf** executable. When called as **inimf** (or when the `-initialize` option is given) it can be used to precompile macros into a `.base` file. When called as **virmf** it will use the plain base. When called under any other name, METAFONT will use that name as the name of the base to use. For example, when called as **mf** the `mf` base is used, which is identical to the plain base. Other bases than plain are rarely used.

The commands given on the command line to the METAFONT program are passed to it as the first input line. (But it is often easier to type extended arguments as the first input line, since shells tend to gobble up or misinterpret METAFONT's favorite symbols, like semicolons, unless you quote them.) As described in *The METAFONTbook*, that first line should begin with a filename, a `\controlsequence`, or a `&basename`.

The normal usage is to say

```
mf \mode=printengine; input font
```

to start processing `font.mf`. (Or you can just say **mf** and give the other stuff on the next line.) Other control sequences, such as `batchmode` (for silent operation) can also appear. The name `font` will be the “job name”, and is used in forming output file names. If METAFONT doesn't get a file name in the first line, the job name is `mfput`. The default extension, `.mf`, can be overridden by specifying an extension explicitly.

A log of error messages goes into the file `font.log`. The output files are `font.tfm` and `font.numbergf`, where `number` depends on the resolution and magnification of the font. The mode in this example is shown

---

<sup>1</sup> <<http://www.miktex.org>>



generically as *printengine*, a symbolic term for which the name of an actual device or, most commonly, the name `localfont` must be substituted. If the mode is not specified or is not valid, METAFONT will default to proof mode which produces large character images for use in font design and refinement. Proof mode can be recognized by the suffix `.2602gf` after the job name. Examples of proof mode output can be found in *Computer Modern Typefaces* (Volume E of *Computers and Typesetting*). The system of magsteps is identical to the system used by T<sub>E</sub>X, with values generally in the range 0.5, 1.0, 2.0, 3.0, 4.0 and 5.0.

Magnification can also be specified not as a magstep but as an arbitrary value, such as 1.315, to create special character sizes.

Before font production can begin, it is necessary to set up the appropriate base files. The minimum set of components for font production for a given printengine is the `plain.mf` macro file and the local `mode_def` file. The macros in `plain.mf` can be studied in an appendix to *The METAFONTbook*; they were developed by Donald E. Knuth, and this file should never be altered. Each `mode_def` specification helps adapt fonts to a particular printengine. The local ones in use on this computer should be in `modes.mf`.

The `e` response to METAFONT's error prompt causes the default editor to start up at the current line of the current file. The configuration value *Editor* can be used to change the editor used. It may contain a string with `%f` indicating where the filename goes and `%l` indicating where the decimal line number (if any) goes.

A convenient file is `null.mf`, containing nothing. When METAFONT can't find the file it thinks you want to input, it keeps asking you for another file name; responding `null` gets you out of the loop if you don't want to input anything.

## Online Graphics Output

You can see METAFONT's output without printing. Chapter 23 of *The METAFONTbook* describes what you can do. You enable screen output by giving `-screen` on the command-line.

## Options

### `-alias=app`

Pretend to be *app*, i.e., set program (and memory dump) name to *app*. This may affect the search paths and other values used. Using this option is equivalent to copying the executable file to *app.exe* and invoking *app.exe*.

### `-aux-directory=dir`

Set the directory *dir* to which auxiliary files are written. Also look for input files in *dir* first, before along the normal search path.

### `-bistack-size=n`

Set the size of the stack for bisection algorithms.

### `-buf-size=n`

Set the the maximum number of characters simultaneously present in current lines of open files and in control sequences between `\csname` and `\endcsname`. T<sub>E</sub>X uses the buffer to contain input lines, but macro expansion works by writing material into the buffer and reparsing the line. As a consequence, certain constructs require the buffer to be very large, even though most documents can be handled with a small value.

### `-c-style-errors`

Change the way, error messages are printed. The alternate style looks like error messages from many compilers and is easier to parse for some editors. This option implies `\scrollmode`.

### `-disable-installer`

Disable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiK<sub>T</sub>E<sub>X</sub> Options (see [Section 4.5](#)).

### `-disable-pipes`

Disable input (output) from (to) child processes.

### `-dont-parse-first-line`

Disable checking whether the first line of the main input file starts with `%&`.

- enable-installer**  
Enable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).
- enable-pipes**  
Enable input (output) from (to) child processes.
- error-line=n**  
Set the width of context lines on terminal error messages.
- half-error-line=n**  
Set the width of first lines of contexts in terminal error messages.
- halt-on-error**  
Quit after the first error.
- help**  
Give help and exit.
- hhelp**  
This option is only available on Windows systems: show the manual page in an HTML Help window and exit when the window is closed.
- include-directory=dir**  
Prefix *dir* to the search path.
- initialize**  
Become the *INI* variant of the compiler.
- interaction=mode**  
Set the interaction mode. Must be one of *batchmode*, *nonstopmode*, *scrollmode* and *errorstopmode*. The meaning of these modes is the same as the corresponding commands.
- job-name=name**  
Set the name of the job (`\jobname`). This has an affect on the output file names.
- job-time=file**  
Set the time-stamp of all output files equal to *file*'s time-stamp.
- lig-table-size=n**  
Set the maximum number of ligature/kern steps. Must be at least 255 and at most 32510.
- main-memory=n**  
Change the total size (in memory words) of the main memory array. Relevant only while creating memory dump files.
- max-print-line=n**  
Set the width of longest text lines output; should be at least 60.
- max-strings=n**  
Set the maximum number of strings.
- max-wiggle=n**  
Set the number of autorounded points per cycle.
- move-size=n**  
Set the the space for storing moves in a single octant.
- no-c-style-errors**  
Don't change the way, error messages are printed.
- output-directory=dir**  
Create output files in *dir*. This implies `-include-directory=dir`.
- param-size=n**  
Set the the maximum number of simultaneous macro parameters.
- parse-first-line**  
Check whether the first line of the main input file starts with `%&`, and parse if it does. This can be used to specify extra command-line options.

- path-size=*n***  
Set the the maximum number of knots between breakpoints of a path.
- pool-size=*n***  
Set the maximum number of characters in strings, including all error messages and help texts, and the names of all fonts and control sequences.
- quiet**  
Suppress all output, except errors.
- record-package-usages=*file***  
Record all package usages and write them into *file*.
- recorder**  
Enable the file name recorder. This leaves a trace of the files opened for input and output in a file with the extension `.fls`.
- screen**  
Enable screen output.
- stack-size=*n***  
Set the maximum number of simultaneous input sources.
- string-vacancies=*n***  
Set the minimum number of characters that should be available for the user's control sequences and font names, after the compiler's own error messages are stored. Must be at least 25000 less than `pool_size`, but doesn't need to be nearly that large.
- tcx=*name***  
Process the TCX table *name*.
- time-statistics**  
Show processing time statistics.
- trace[=*tracestreams*]**  
Enable trace messages. The *tracestreams* argument, if specified, is a comma-separated list of trace stream names ([Chapter 9, "Trace Streams"](#)).
- undump=*name***  
Use *name* as the name of the format to be used, instead of the name by which the program was called or a  
%&  
line.
- version**  
Show version information and exit.

## Environment

### MFINPUTS

Extra paths to locate METAFONT input and openin files.

## See also

### *The METAFONTbook*

ISBN 0-201-13444-6

## miktex-tools

### Name

miktex-tools — experimental T<sub>E</sub>X additions

### Description

MiK<sub>T</sub>E<sub>X</sub> Tools should be regarded as an addition to the host T<sub>E</sub>X system installed on your system.

The following utilities are included:

- **miktex-pdf<sub>T</sub>ex**: MiK<sub>T</sub>E<sub>X</sub> implementation of the pdf<sub>T</sub>ex engine
- **mpm**: MiK<sub>T</sub>E<sub>X</sub> Package Manager
- **mthelp**: MiK<sub>T</sub>E<sub>X</sub> Help Utility

### System-wide configuration

In order to configure MiK<sub>T</sub>E<sub>X</sub> Tools for your system, you run the MiK<sub>T</sub>E<sub>X</sub> configuration utility (**initexmf**) and the MiK<sub>T</sub>E<sub>X</sub> package manager (**mpm**):

```
sudo initexmf --admin --configure
sudo mpm --admin --update-db
```

This is what happens:

- The TEXMF trees of the host T<sub>E</sub>X system are collected; the information is written to `/var/lib/miktex-texmf/miktex/config/miktexstartup.ini`
- the system-wide file name database is created
- the package database is downloaded from the MiK<sub>T</sub>E<sub>X</sub> package repository

### Per-user configuration

Once you have configured MiK<sub>T</sub>E<sub>X</sub> Tools for the system, each user should create the per-user file name database:

```
initexmf --update-fndb
```

Without this step, the on-the-fly package installer will not work.

### MiK<sub>T</sub>E<sub>X</sub>-pdf<sub>T</sub>ex

MiK<sub>T</sub>E<sub>X</sub>-pdf<sub>T</sub>ex is an alternative pdf<sub>T</sub>ex engine. The engine features integrated package management, i.e., missing packages will be installed on the-fly (after confirmation).

You invoke MiK<sub>T</sub>E<sub>X</sub>-pdf<sub>T</sub>ex as follows:

```
miktex-pdfTex --undump=latex sample2e
```

The `-undump` option must be used to specify the format. See the **miktex-pdftex** reference page, for more information.

If you prefer shortcuts, you can create symbolic links to the MiKTeX-pdfTeX engine:

```
mkdir ~/bin
cd ~/bin
ln -s /usr/bin/miktex-pdftex latex
ln -s /usr/bin/miktex-pdftex pdflatex
PATH=~:/bin:$PATH
```

Then you can invoke the engine in the usual way:

```
pdflatex sample2e
```

Of course, you can replace `~/bin` with a more suitable directory.

## Using the MiKTeX package manager

MPM (MiKTeX Package Manager) was originally intended to be a tool for MiKTeX users. But the program can be helpful for users of other T<sub>E</sub>X systems too, because many of the MiKTeX packages are system-independent.

There are two variants of the package manager: GUI and console. Run

```
mpm
```

to start the GUI variant of the package manager. You will be presented with a list of packages.

The rest of this section describes the console variant of the package manager.

To list the contents of the package database, run

```
mpm --list
```

To get detailed information about a package, run

```
mpm --print-package-info=package
```

If you want to install a package, run

```
mpm --install=package
```

## Using the mthelp utility

The **mthelp** utility can be used to lookup package documentation.

Run

```
mthelp package
```

to view an HTML page which contains links to the documentation files of a package.

## Caveats

The integrated package manager installs packages in the user home directory under `~/miktex-texmf/`. A better approach would be to enhance the auto-install dialog box:

1. add a new check box: **Install package in `/usr/share/miktex-texmf`**
2. A password dialog pops up, if the user has chosen to install the package in the `/usr/` directory.
3. the package manager is run with root privileges, if the the user entered the root password.

This will be implemented in one of the next beta releases.

## See also

`initexmf(1)`, `miktex-pdftex(1)`, `mpm(1)`, `mthelp(1)`

## mpm

### Name

`mpm` — MiKTeX package manager

### Synopsis

`mpm [option...]`

### Description

MPM (MiKTeX Package Manager) is used to install packages from a MiKTeX package repository.

MPM was originally intended to be a tool for MiKTeX users. But the program can be helpful for users of other T<sub>E</sub>X systems too, because many of the MiKTeX packages are system-independent.

### Two variants

The package manager can be run in two modes:

#### **batch**

MPM is driven by command-line options.

#### **windowed**

MPM shows a package list view with standard GUI controls (such as tool bar buttons and command menus).

MPM starts in windowed mode, if you do not specify any command-line options.

### Options

#### **-admin**

Run in administrative mode.

#### **-find-updates**

Test the package repository for updates, then print the list of updateable packages.

#### **-help**

Give help and exit.

- hhelp**  
This option is only available on Windows systems: show the manual page in an HTML Help window and exit when the window is closed.
- import=PACKAGE**  
Import the specified package from another MiKTeX installation. The root directory must be specified via `-repository=DIR`.
- import-all**  
Import all packages from another MiKTeX installation. The root directory must be specified via `-repository=DIR`.
- install=package**  
Install the specified package.
- install-some=file**  
Install packages listed (line-by-line) in the specified file.
- list**  
List the contents of the package database: for each package, print the installation status, the number of files, the size, and the name.
- list-repositories**  
Download the list of known package repository URLs from the MiKTeX project server, then print the list.
- pick-repository-url**  
Pick up a suitable URL from the package repository list and print it.
- print-package-info=package**  
Print detailed information about the specified package.
- quiet**  
Suppress all output, except errors.
- repository=location**  
Use the specified location as the package repository. The location can be either a fully qualified path name (a local package repository) or an URL (a remote package repository). You can use the `-list-repositories` to retrieve a list of working package repository URLs.
- set-repository=location**  
This option is only available on Windows systems: permanently register the location of the default package repository in the user area of the Windows Registry. The location can be either a fully qualified path name (a local package repository) or an URL (a remote package repository).
- trace[=tracestreams]**  
Enable trace messages. The `tracestreams` argument, if specified, is a comma-separated list of trace stream names ([Chapter 9, "Trace Streams"](#)).
- uninstall=package**  
Uninstall the specified package.
- update=[package]**  
Update the specified package, if an updated version is available in the package repository. Update all installed packages, if `package` is omitted.
- update-db**  
Synchronize the local package database with the package repository.
- update-some=file**  
Update packages listed (line-by-line) in the specified file.
- verify**  
Verify the integrity of all installed packages.
- verify=package**  
Verify the integrity of the specified package.

**-verbose**

Turn on verbose output mode.

**-version**

Show version information and exit.

## Installation Destination

All files are installed in the TEXMF installation directory (usually C:\Program Files\MiKTeX 2.9). It may be necessary to specify the location of the installation directory, if you are running MPM as a standalone program, i.e., if MiKTeX is not the TeX system.

The `-install-root` option allows you to set the installation directory for one invocation of MPM.

## Package Database

All package information is retrieved from the package database, which must have been properly installed by running MPM with the `-update-db` option.

## Examples

Print the list of known package repository URLs:

```
> mpm --list-repositories
```

Retrieve the package database files from the FTP server `some.server`:

```
> mpm --repository=ftp://some.server/miktex/packages/ \
  --verbose --update-db
```

Print information about package `a0poster`:

```
> mpm --print-package-info a0poster
```

Install package `a0poster`:

```
> mpm --verbose --install a0poster
```

Update all installed packages:

```
> mpm --verbose --update
```

Print the list of installed packages:

```
> mpm --list | grep ^i
```

## Environment

**MIKTEX\_REPOSITORY**

Location of the package repository. This can be either a fully qualified path name (a local package repository) or an URL (a remote package repository).

**http\_proxy**

The proxy server to be used for HTTP.

**FTP\_PROXY**

The proxy server to be used for FTP.

**ALL\_PROXY**

The proxy server to be used, if no protocol-specific proxy is set.

**NO\_PROXY**

Comma-separated list of host names that should not go through any proxy.



## See also

MiKTeX Project Page<sup>2</sup> <<http://www.miktex.org>>

## mpost

### Name

mpost — METAPOST, a system for drawing pictures

### Synopsis

```
mpost [option...] [command | file]
```

### Description

METAPOST (installed as **mpost**) reads a series of pictures specified in the METAPOST programming language, and outputs corresponding PostScript code.

Like T<sub>E</sub>X and METAFONT, METAPOST is normally used with a large body of precompiled macros. This version of METAPOST looks at its command line to see what name it was called under. Both **inimpost** and **virmpost** are aliases for the **mpost** executable. When called as **inimpost** (or when the `-initialize` option is given) it can be used to precompile macros into a `.mem` file. When called as **virmpost** it will use the plain mem. When called under any other name, METAPOST will use that name as the name of the mem to use. For example, when called as **mpost** the `mpost` mem is used, which is identical to the plain mem. Other mems than plain are rarely used.

The commands given on the command line to the METAPOST program are passed to it as the first input line. (But it is often easier to type extended arguments as the first input line, since shells tend to gobble up or misinterpret METAPOST's favorite symbols, like semicolons, unless you quote them.) The first line should begin with a filename, a `\controlsequence`, or a `&basename`.

The normal usage is to say `mpost figs` to process the file `figs.mp`. The basename of `figs` becomes the "jobname", and is used in forming output file names. If no file is named, the jobname becomes `mpout`. The default extension, `.mp`, can be overridden by specifying an extension explicitly.

### Options

#### **-alias=*app***

Pretend to be *app*, i.e., set program (and memory dump) name to *app*. This may affect the search paths and other values used. Using this option is equivalent to copying the executable file to *app.exe* and invoking *app.exe*.

#### **-aux-directory=*dir***

Set the directory *dir* to which auxiliary files are written. Also look for input files in *dir* first, before along the normal search path.

#### **-c-style-errors**

Change the way, error messages are printed. The alternate style looks like error messages from many compilers and is easier to parse for some editors. This option implies `\scrollmode`.

#### **-disable-installer**

Disable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).

---

<sup>2</sup> <<http://www.miktex.org>>

- disable-pipes**  
Disable input (output) from (to) child processes.
- dont-parse-first-line**  
Disable checking whether the first line of the main input file starts with %&.
- enable-installer**  
Enable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).
- enable-pipes**  
Enable input (output) from (to) child processes.
- halt-on-error**  
Quit after the first error.
- help**  
Give help and exit.
- hhelp**  
This option is only available on Windows systems: show the manual page in an HTML Help window and exit when the window is closed.
- include-directory=*dir***  
Prefix *dir* to the search path.
- initialize**  
Become the *INI* variant of the compiler.
- interaction=*mode***  
Set the interaction mode. Must be one of *batchmode*, *nonstopmode*, *scrollmode* and *errorstopmode*. The meaning of these modes is the same as the corresponding commands.
- job-name=*name***  
Set the name of the job (`\jobname`). This has an affect on the output file names.
- job-time=*file***  
Set the time-stamp of all output files equal to *file*'s time-stamp.
- no-c-style-errors**  
Don't change the way, error messages are printed.
- output-directory=*dir***  
Create output files in *dir*. This implies `-include-directory=dir`.
- parse-first-line**  
Check whether the first line of the main input file starts with %&, and parse if it does. This can be used to specify extra command-line options.
- quiet**  
Suppress all output, except errors.
- record-package-usages=*file***  
Record all package usages and write them into *file*.
- recorder**  
Enable the file name recorder. This leaves a trace of the files opened for input and output in a file with the extension `.fls`.
- tcx=*name***  
Process the TCX table *name*.
- tex=*texprogram***  
Use *texprogram* instead of `tex` when compiling text labels.  
This flag overrides the environment variable `TEX`.
- time-statistics**  
Show processing time statistics.

**-trace[=*tracestreams*]**

Enable trace messages. The *tracestreams* argument, if specified, is a comma-separated list of trace stream names ([Chapter 9](#), “Trace Streams”).

**-undump=*name***

Use *name* as the name of the format to be used, instead of the name by which the program was called or a

`%&`

line.

**-version**

Show version information and exit.

## Environment

**MFINPUTS**

Extra paths to locate METAFONT input and openin files.

**MPINPUTS**

Extra paths to locate METAPOST input files.

## See also

***AT&T technical report CSTR-162***

Run `mthelp mpman`

## mthelp

### Name

mthelp — MiKTeX help utility

### Synopsis

```
mthelp [option...] name...
```

### Description

**mthelp** is a utility to lookup TeX package documentation.

**mthelp** creates an HTML page which contains a short description of the package together with links to all documentation files. An HTML viewer is started to view the page.

You can use the `-view` to bypass the intermediate HTML file.

*name* should be the name of a package in the TeX distribution.

### Options

**-list-only**

List documentation files, but do not start a viewer.

**-print-only**

Print the command that would be executed to view the documentation, but do not start the command.

- quiet**  
Suppress all output, except errors.
- version**  
Show version information and exit.
- view**  
Open the main documentation file in a viewer.

## Environment

- MIKTEX\_VIEW\_dvi**  
DVI viewer.
- MIKTEX\_VIEW\_pdf**  
PDF viewer.
- MIKTEX\_VIEW\_ps**  
PostScript viewer.
- MIKTEX\_VIEW\_html**  
HTML viewer.
- MIKTEX\_VIEW\_txt**  
Text viewer.

The environment variables should be set with a “%f” as a placeholder for the name of the file. For example:

```
> MIKTEX_VIEW_pdf="gv %f"
```

## Files

The intermediate HTML file (*package.html*) is stored in the directory `miktex/mthelp` relative to the data TEXMF root.

## See also

MiKTeX Project Page<sup>3</sup> <<http://www.miktex.org>>

## mtprint

### Name

mtprint — MiKTeX print utility

### Synopsis

```
mtprint [option...] file...
```

### Description

**mtprint** sends TeX output files to a printing device.

---

<sup>3</sup> <<http://www.miktex.org>>

## Options

**-even-only**

Prints only even T<sub>E</sub>X pages.

**-landscape**

Selects landscape output format.

**-odd-only**

Prints only odd T<sub>E</sub>X pages.

**-page-range=*range***

Selects a T<sub>E</sub>X page range (e.g., 20–21). Multiple **-page-range** options accumulate

**-print-method=*method***

Selects a print method. One of

**psbmp**

This method uses Dvips and Ghostscript to produce the print output.

**ps** This method uses Dvips to produce an intermediate PostScript file which will be sent to the printer. This only works for PostScript printers.

**-print-nothing**

Simulates printing.

**-printer=*printer***

Selects a printing device. The default printer is used, if this option is omitted.

## omega

### Name

omega — extended unicode T<sub>E</sub>X

### Synopsis

omega [*option...*] [*file* | *\command*]

### Description

Ω is a 16-bit enhanced version of T<sub>E</sub>X.

### Options

**-alias=*app***

Pretend to be *app*, i.e., set program (and memory dump) name to *app*. This may affect the search paths and other values used. Using this option is equivalent to copying the executable file to *app.exe* and invoking *app.exe*.

**-aux-directory=*dir***

Set the directory *dir* to which auxiliary files are written. Also look for input files in *dir* first, before along the normal search path.

**-buf-size=*n***

Set the the maximum number of characters simultaneously present in current lines of open files and in control sequences between *\csname* and *\endcsname*. T<sub>E</sub>X uses the buffer to contain input lines, but macro expansion works by writing material into the buffer and reparsing the line. As a consequence,

- certain constructs require the buffer to be very large, even though most documents can be handled with a small value.
- c-style-errors**  
Change the way, error messages are printed. The alternate style looks like error messages from many compilers and is easier to parse for some editors. This option implies `\scrollmode`.
  - disable-installer**  
Disable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).
  - disable-pipes**  
Disable input (output) from (to) child processes.
  - disable-write18**  
Disable the `\write18{command}` construct.
  - dont-parse-first-line**  
Disable checking whether the first line of the main input file starts with `%&`.
  - enable-installer**  
Enable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).
  - enable-pipes**  
Enable input (output) from (to) child processes.
  - enable-write18**  
Fully enable the `\write18{command}` construct. It is only partially enabled by default to avoid security problems. When fully enabled, the command (which undergoes the usual `TeX` expansions) is passed to the command interpreter. The output of the command is not diverted anywhere, so it will not appear in the log file. The command execution either happens at `\output` time or right away, according to the absence or presence of the `\immediate` prefix.
  - error-line=n**  
Set the width of context lines on terminal error messages.
  - extra-mem-bot=n**  
Set the extra size (in memory words) for large data structures like boxes, glue, breakpoints, et al. Relevant only after the memory dump file has been read.
  - extra-mem-top=n**  
Set the extra size (in memory words) for chars, tokens, et al. Relevant only after the memory dump file has been read.
  - half-error-line=n**  
Set the width of first lines of contexts in terminal error messages.
  - halt-on-error**  
Quit after the first error.
  - help**  
Give help and exit.
  - hhelp**  
This option is only available on Windows systems: show the manual page in an HTML Help window and exit when the window is closed.
  - include-directory=dir**  
Prefix *dir* to the search path.
  - initialize**  
Become the *INI* variant of the compiler.
  - interaction=mode**  
Set the interaction mode. Must be one of `batchmode`, `nonstopmode`, `scrollmode` and `errorstopmode`. The meaning of these modes is the same as the corresponding commands.

- job-name=*name***  
Set the name of the job (`\jobname`). This has an affect on the output file names.
- job-time=*file***  
Set the time-stamp of all output files equal to *file*'s time-stamp.
- main-memory=*n***  
Change the total size (in memory words) of the main memory array. Relevant only while creating memory dump files.
- max-in-open=*n***  
Set the maximum number of input files and error insertions that can be going on simultaneously.
- max-print-line=*n***  
Set the width of longest text lines output; should be at least 60.
- max-strings=*n***  
Set the maximum number of strings.
- enable-mltex**  
Enable MLTeX extensions such as `\charsubdef`.
- nest-size=*n***  
Set the maximum number of semantic levels simultaneously active.
- no-c-style-errors**  
Don't change the way, error messages are printed.
- output-directory=*dir***  
Create output files in *dir*. This implies `-include-directory=dir`.
- param-size=*n***  
Set the the maximum number of simultaneous macro parameters.
- parse-first-line**  
Check whether the first line of the main input file starts with `%&`, and parse if it does. This can be used to specify extra command-line options.
- pool-size=*n***  
Set the maximum number of characters in strings, including all error messages and help texts, and the names of all fonts and control sequences.
- quiet**  
Suppress all output, except errors.
- record-package-usages=*file***  
Record all package usages and write them into *file*.
- recorder**  
Enable the file name recorder. This leaves a trace of the files opened for input and output in a file with the extension `.fls`.
- save-size=*n***  
Set the the amount of space for saving values outside of current group.
- src-specials**  
Embed source file information (source specials) in the DVI file.
- stack-size=*n***  
Set the maximum number of simultaneous input sources.
- string-vacancies=*n***  
Set the minimum number of characters that should be available for the user's control sequences and font names, after the compiler's own error messages are stored. Must be at least 25000 less than `pool_size`, but doesn't need to be nearly that large.
- tcx=*name***  
Process the TCX table *name*.

- time-statistics**  
Show processing time statistics.
- trace[=*tracestreams*]**  
Enable trace messages. The *tracestreams* argument, if specified, is a comma-separated list of trace stream names ([Chapter 9, “Trace Streams”](#)).
- trie-op-size=*n***  
Set the amount of space for “opcodes” in the hyphenation patterns.
- trie-size=*n***  
Set the amount of space for hyphenation patterns.
- undump=*name***  
Use *name* as the name of the format to be used, instead of the name by which the program was called or a  
%&  
line.
- version**  
Show version information and exit.

## See also

### *Draft documentation for the $\Omega$ system*

Run `mthelp omega-manual`

## miktex-pdftex

### Name

miktex-pdftex — DVI/PDF output from T<sub>E</sub>X

### Synopsis

miktex-pdftex [*option...*] [*file* | \command]

### Description

Run the pdfT<sub>E</sub>X typesetter on *file*, usually creating *file.pdf*. If the file argument has no extension, *.tex* will be appended to it. Instead of a file name, a set of pdfT<sub>E</sub>X commands can be given, the first of which must start with a backslash.

pdfT<sub>E</sub>X is a version of T<sub>E</sub>X that can create PDF files as well as DVI files.

In PDF mode, pdfT<sub>E</sub>X can natively handle the PDF, JPG, and PNG graphics formats.

### Options

- alias=*app***  
Pretend to be *app*, i.e., set program (and memory dump) name to *app*. This may affect the search paths and other values used. Using this option is equivalent to copying the executable file to *app.exe* and invoking *app.exe*.
- aux-directory=*dir***  
Set the directory *dir* to which auxiliary files are written. Also look for input files in *dir* first, before along the normal search path.



**-buf-size=n**

Set the the maximum number of characters simultaneously present in current lines of open files and in control sequences between `\csname` and `\endcsname`. TeX uses the buffer to contain input lines, but macro expansion works by writing material into the buffer and reparsing the line. As a consequence, certain constructs require the buffer to be very large, even though most documents can be handled with a small value.

**-c-style-errors**

Change the way, error messages are printed. The alternate style looks like error messages from many compilers and is easier to parse for some editors. This option implies `\scrollmode`.

**-disable-installer**

Disable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).

**-disable-pipes**

Disable input (output) from (to) child processes.

**-disable-write18**

Disable the `\write18{command}` construct.

**-dont-parse-first-line**

Disable checking whether the first line of the main input file starts with `%&`.

**-draftmode**

Switch on draft mode (generates no output).

**-enable-encTeX**

Enable encTeX extensions such as `\mubyte`.

**-enable-etex**

Enable eTeX extensions.

**-enable-installer**

Enable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).

**-enable-mltex**

Enable MLTeX extensions such as `\charsubdef`.

**-enable-pipes**

Enable input (output) from (to) child processes.

**-enable-write18**

Fully enable the `\write18{command}` construct. It is only partially enabled by default to avoid security problems. When fully enabled, the command (which undergoes the usual TeX expansions) is passed to the command interpreter. The output of the command is not diverted anywhere, so it will not appear in the log file. The command execution either happens at `\output` time or right away, according to the absence or presence of the `\immediate` prefix.

**-error-line=n**

Set the width of context lines on terminal error messages.

**-extra-mem-bot=n**

Set the extra size (in memory words) for large data structures like boxes, glue, breakpoints, et al. Relevant only after the memory dump file has been read.

**-extra-mem-top=n**

Set the extra size (in memory words) for chars, tokens, et al. Relevant only after the memory dump file has been read.

**-font-max=n**

Set the maximum internal font number.

**-font-mem-size=n**

Set the size, in TeX memory words, of the font memory.

**-half-error-line=n**

Set the width of first lines of contexts in terminal error messages.

- halt-on-error**  
Quit after the first error.
- hash-extra=*n***  
Set the extra space for the hash table of control sequences (which allows 10K names as distributed).
- help**  
Give help and exit.
- include-directory=*dir***  
Prefix *dir* to the search path.
- initialize**  
Become the *INI* variant of the compiler.
- interaction=*mode***  
Set the interaction mode. Must be one of *batchmode*, *nonstopmode*, *scrollmode* and *errorstopmode*. The meaning of these modes is the same as the corresponding commands.
- job-name=*name***  
Set the name of the job (*\jobname*). This has an affect on the output file names.
- job-time=*file***  
Set the time-stamp of all output files equal to *file*'s time-stamp.
- main-memory=*n***  
Change the total size (in memory words) of the main memory array. Relevant only while creating memory dump files.
- max-in-open=*n***  
Set the maximum number of input files and error insertions that can be going on simultaneously.
- max-print-line=*n***  
Set the width of longest text lines output; should be at least 60.
- max-strings=*n***  
Set the maximum number of strings.
- nest-size=*n***  
Set the maximum number of semantic levels simultaneously active.
- no-c-style-errors**  
Don't change the way, error messages are printed.
- output-directory=*dir***  
Create output files in *dir*. This implies **-include-directory=*dir***.
- output-format=*format***  
Set the output format.
- param-size=*n***  
Set the the maximum number of simultaneous macro parameters.
- parse-first-line**  
Check whether the first line of the main input file starts with *%&*, and parse if it does. This can be used to specify extra command-line options.
- pool-size=*n***  
Set the maximum number of characters in strings, including all error messages and help texts, and the names of all fonts and control sequences.
- quiet**  
Suppress all output, except errors.
- record-package-usages=*file***  
Record all package usages and write them into *file*.
- recorder**  
Enable the file name recorder. This leaves a trace of the files opened for input and output in a file with the extension *.fls*.

- restrict-write18**  
Partially enable the `\write18{command}` construct.
- save-size=*n***  
Set the the amount of space for saving values outside of current group.
- src-specials**  
Embed source file information (source specials) in the DVI file.
- stack-size=*n***  
Set the maximum number of simultaneous input sources.
- string-vacancies=*n***  
Set the minimum number of characters that should be available for the user's control sequences and font names, after the compiler's own error messages are stored. Must be at least 25000 less than `pool_size`, but doesn't need to be nearly that large.
- synctex=*n***  
Generate SyncTeX data for previewers if nonzero.
- tcx=*name***  
Process the TCX table *name*.
- time-statistics**  
Show processing time statistics.
- trace[=*tracestreams*]**  
Enable trace messages. The *tracestreams* argument, if speciefied, is a comma-separated list of trace stream names ([Chapter 9](#), "[Trace Streams](#)").
- trie-size=*n***  
Set the amount of space for hyphenation patterns.
- undump=*name***  
Use *name* as the name of the format to be used, instead of the name by which the program was called or a  
%&  
line.
- version**  
Show version information and exit.

## Files

- pdftex.cfg**  
The MiKTeX-pdfTeX configuration file.

## Environment

- TEXINPUTS**  
Extra paths to locate T<sub>E</sub>X `\input` and `\openin` files.
- TFM FONTS**  
Extra paths to locate T<sub>E</sub>X font metric files

## See also

- The pdfT<sub>E</sub>X user manual (A4 version)***  
Run `mthelp pdftex-a`

## setupwiz

### Name

basic-miktex, setup — MiKTeX setup wizard

### Synopsis

basic-miktex-2.9.xxxx.exe [*options*]

setup-2.9.xxxx.exe [*options*]

### Description

MiKTeX Setup Wizard is used to install MiKTeX.

There are two instances of the installer:

#### Basic MiKTeX Installer (**basic-miktex-2.9.xxxx.exe**)

*Basic MiKTeX Installer* is used to set up a basic MiKTeX system. All required resources are embedded in the installer, i.e., nothing else needs to be downloaded from the Internet.

#### MiKTeX Net Installer (**setup-2.9.xxxx.exe**)

*MiKTeX Net Installer* is used to set up a complete MiKTeX system. In a first step, all required resources will be downloaded from the Internet. In a second step, a complete MiKTeX system is installed.

Both installers read command-line options from the file `setupwiz.opt`, if it exists.

### Options

**-allow-unattended-reboot**

Restart the system, if necessary.

**-common-config=dir**

Set the location of the common configuration directory. This option requires administrator privileges.

**-common-data=dir**

Set the location of the common data directory. This option requires administrator privileges.

**-common-install=dir**

Set the common installation directory. This option requires administrator privileges.

**-common-roots=dirs**

Register additional directories for all users. *dirs* must be a semicolon-separated list of fully qualified path names. This option requires administrator privileges.

Environment variables (<VARNAME>) can be used.

**-download-only**

Download all required packages, but do not otherwise install MiKTeX.

**-dry-run**

Simulate. No files shall be downloaded and/or installed.

**-install-from-local-repository**

Install MiKTeX from a directory (to be specified with the `-local-package-repository` option).

**-local-package-repository=dir**

Download into (Install from) the specified directory.

**-no-additional-roots**

Do not integrate additional TEXMF root directories into the MiKTeX setup.

**-no-registry**

Do not store path information in the Windows Registry but write the startup configuration file (`miktexstartup.ini`).

**-package-set=*set***

Download/Install the specified package set. This must be one of `basic`, `complete`.

**-portable**

Setup MiKTeX Portable.

**-private**

Install MiKTeX for the current user only.

**-program-folder=*name***

Add shortcuts to the specified program folder.

**-remote-package-repository=*url***

Download from the specified the URL.

**-shared**

Install MiKTeX for everyone using this computer. This option requires administrator privileges.

**-unattended**

Run in unattended mode.

**-user-config=*dir***

Set the location of the configuration directory for the current user.

Environment variables (`<VARNAME>`) can be used. See the example below.

**-user-data=*dir***

Set the location of the data directory for the current user.

Environment variables (`<VARNAME>`) can be used. See the example below.

**-user-install=*dir***

Set the user installation directory.

Environment variables (`<VARNAME>`) can be used. See the example below.

**-user-roots=*dirs***

Register additional directories for the current user. *dirs* must be a semicolon-separated list of fully qualified path names.

Environment variables (`<VARNAME>`) can be used.

## Examples

In this example, MiKTeX is installed from a network share (`\\server\miktex\repository`). User directories are specified by using environment variables (`<VARNAME>`) which are expanded at run-time.

```
> setupwiz --install-from-local-repository ^
--local-package-repository==\\server\miktex\repository ^
--package-set=complete ^
--shared ^
--user-config=~<APPDATA~>\MiKTeX\2.9 ^
--user-data=~<LOCALAPPDATA~>\MiKTeX\2.9 ^
--user-install=~<APPDATA~>\MiKTeX\2.9
```

## tex

### Name

tex — T<sub>E</sub>X

## Synopsis

```
tex [option...] [file | \command]
```

## Description

T<sub>E</sub>X formats the interspersed text and commands contained in the named files and outputs a typesetter independent file (called DVI, which is short for DeVice Independent). T<sub>E</sub>X's capabilities and language are described in *The T<sub>E</sub>Xbook*. T<sub>E</sub>X is normally used with a large body of precompiled macros, and there are several specific formatting systems, such as L<sup>A</sup>T<sub>E</sub>X, which require the support of several macro files.

T<sub>E</sub>X looks at its command-line to see what name it was called under. Both **initex** and **virtex** are linked to the **tex** executable. When called as **initex** (or when the `-initialize` option is given) it can be used to precompile macros into a `.fmt` file. When called as **virtex** it will use the plain format. When called under any other name, T<sub>E</sub>X will use that name as the name of the format to use. For example, when called as **tex** the `tex` format is used, which is identical to the plain format. The commands defined by the plain format are documented in *The T<sub>E</sub>Xbook*. Other formats that are often available include `latex` and `amstex`.

The commands given on the command-line to the T<sub>E</sub>X program are passed to it as the first input line. (But it is often easier to type extended arguments as the first input line, since shells tend to gobble up or misinterpret T<sub>E</sub>X's favorite symbols, like backslashes, unless you quote them.) As described in *The T<sub>E</sub>Xbook*, that first line should begin with a file name, a `\controlsequence`, or a `&formatname`.

The normal usage is to say

```
tex paper
```

to start processing `paper.tex`. The name "paper" will be the "job name", and is used in forming output file names. If T<sub>E</sub>X doesn't get a file name in the first line, the job name is `texput`. When looking for a file, T<sub>E</sub>X looks for the name with and without the default extension (`.tex`) appended, unless the name already contains that extension. If `paper` is the "job name", a log of error messages, with rather more detail than normally appears on the screen, will appear in `paper.log`, and the output file will be in `paper.dvi`.

T<sub>E</sub>X will look in the first line of the file `paper.tex` to see if it begins with the magic sequence `%&`. If the first line begins with `%&format --translate-file tcxname`, then T<sub>E</sub>X will use the named format and translation table `tcxname` to process the source file. Either the format name or the `-translate-file` specification may be omitted, but not both.

The `e` response to T<sub>E</sub>X's error prompt causes the default editor to start up at the current line of the current file. The configuration value `Editor` can be used to change the editor used. It may contain a string with `%f` indicating where the file name goes and `%l` indicating where the decimal line number (if any) goes.

A convenient file is `null.tex`, containing nothing. When T<sub>E</sub>X can't find a file it thinks you want to input, it keeps asking you for another file name; responding `null` gets you out of the loop if you don't want to input anything. You can also type your EOF character (usually **Control-Z**).

## Options

**-alias=app**

Pretend to be *app*, i.e., set program (and memory dump) name to *app*. This may affect the search paths and other values used. Using this option is equivalent to copying the executable file to *app.exe* and invoking *app.exe*.

**-aux-directory=dir**

Set the directory *dir* to which auxiliary files are written. Also look for input files in *dir* first, before along the normal search path.

**-buf-size=n**

Set the the maximum number of characters simultaneously present in current lines of open files and in control sequences between `\csname` and `\endcsname`. T<sub>E</sub>X uses the buffer to contain input lines, but macro expansion works by writing material into the buffer and reparsing the line. As a consequence, certain constructs require the buffer to be very large, even though most documents can be handled with a small value.

- c-style-errors**  
Change the way, error messages are printed. The alternate style looks like error messages from many compilers and is easier to parse for some editors. This option implies `\scrollmode`.
- disable-installer**  
Disable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).
- disable-pipes**  
Disable input (output) from (to) child processes.
- disable-write18**  
Disable the `\write18{command}` construct.
- dont-parse-first-line**  
Disable checking whether the first line of the main input file starts with `%&`.
- enable-encTeX**  
Enable encTeX extensions such as `\mubyte`.
- enable-installer**  
Enable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).
- enable-mlTeX**  
Enable MLTeX extensions such as `\charsubdef`.
- enable-pipes**  
Enable input (output) from (to) child processes.
- enable-write18**  
Fully enable the `\write18{command}` construct. It is only partially enabled by default to avoid security problems. When fully enabled, the command (which undergoes the usual TeX expansions) is passed to the command interpreter. The output of the command is not diverted anywhere, so it will not appear in the log file. The command execution either happens at `\output` time or right away, according to the absence or presence of the `\immediate` prefix.
- error-line=n**  
Set the width of context lines on terminal error messages.
- extra-mem-bot=n**  
Set the extra size (in memory words) for large data structures like boxes, glue, breakpoints, et al. Relevant only after the memory dump file has been read.
- extra-mem-top=n**  
Set the extra size (in memory words) for chars, tokens, et al. Relevant only after the memory dump file has been read.
- font-max=n**  
Set the maximum internal font number.
- font-mem-size=n**  
Set the size, in TeX memory words, of the font memory.
- half-error-line=n**  
Set the width of first lines of contexts in terminal error messages.
- halt-on-error**  
Quit after the first error.
- hash-extra=n**  
Set the extra space for the hash table of control sequences (which allows 10K names as distributed).
- help**  
Give help and exit.
- include-directory=dir**  
Prefix *dir* to the search path.

- initialize**  
Become the *INI* variant of the compiler.
- interaction=mode**  
Set the interaction mode. Must be one of *batchmode*, *nonstopmode*, *scrollmode* and *errorstopmode*. The meaning of these modes is the same as the corresponding commands.
- job-name=name**  
Set the name of the job (*\jobname*). This has an affect on the output file names.
- job-time=file**  
Set the time-stamp of all output files equal to *file*'s time-stamp.
- main-memory=n**  
Change the total size (in memory words) of the main memory array. Relevant only while creating memory dump files.
- max-in-open=n**  
Set the maximum number of input files and error insertions that can be going on simultaneously.
- max-print-line=n**  
Set the width of longest text lines output; should be at least 60.
- max-strings=n**  
Set the maximum number of strings.
- nest-size=n**  
Set the maximum number of semantic levels simultaneously active.
- no-c-style-errors**  
Don't change the way, error messages are printed.
- output-directory=dir**  
Create output files in *dir*. This implies *-include-directory=dir*.
- param-size=n**  
Set the the maximum number of simultaneous macro parameters.
- parse-first-line**  
Check whether the first line of the main input file starts with *%&*, and parse if it does. This can be used to specify extra command-line options.
- pool-size=n**  
Set the maximum number of characters in strings, including all error messages and help texts, and the names of all fonts and control sequences.
- quiet**  
Suppress all output, except errors.
- recorder**  
Enable the file name recorder. This leaves a trace of the files opened for input and output in a file with the extension *.fls*.
- record-package-usages=file**  
Record all package usages and write them into *file*.
- restrict-write18**  
Partially enable the *\write18{command}* construct.
- save-size=n**  
Set the the amount of space for saving values outside of current group.
- src-specials**  
Embed source file information (source specials) in the DVI file.
- stack-size=n**  
Set the maximum number of simultaneous input sources.
- string-vacancies=n**  
Set the minimum number of characters that should be available for the user's control sequences and font



names, after the compiler's own error messages are stored. Must be at least 25000 less than `pool_size`, but doesn't need to be nearly that large.

**-tcx=*name***

Process the TCX table *name*.

**-time-statistics**

Show processing time statistics.

**-trace[=*tracestreams*]**

Enable trace messages. The *tracestreams* argument, if specified, is a comma-separated list of trace stream names ([Chapter 9, "Trace Streams"](#)).

**-trie-size=*n***

Set the amount of space for hyphenation patterns.

**-undump=*name***

Use *name* as the name of the format to be used, instead of the name by which the program was called or a

`%&`

line.

**-version**

Show version information and exit.

## Aliases

**initex**

Equivalent to `tex -ini`.

**virtex**

Equivalent to `tex`.

## Environment

**TEXINPUTS**

Extra paths to locate T<sub>E</sub>X `\input` and `\openin` files.

**TFM FONTS**

Extra paths to locate T<sub>E</sub>X font metric files

## See Also

*The T<sub>E</sub>Xbook*

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See [`texify\(1\)`](#), for an alternative way to invoke T<sub>E</sub>X.

## texify

## Name

texify — MiK<sub>T</sub>E<sub>X</sub> compiler driver

## Synopsis

texify [*option...*] *file...*

## Description

**texify** runs Texinfo or L<sup>A</sup>T<sub>E</sub>X input files through **tex** (**pdftex**) in turn until all cross-references are resolved, building all indices.

The directory containing each *file* is searched for included files. The suffix of *file* is used to determine its language (L<sup>A</sup>T<sub>E</sub>X or Texinfo).

**makeinfo** is used to perform Texinfo macro expansion before running **tex** when needed.

## Options

- @ Use @input (instead of \input); for preloaded Texinfo.
- batch, -b  
No interaction.
- clean, -c  
Remove all auxiliary files.
- expand, -e  
Force macro expansion using **makeinfo**.
- I *dir*  
Search *dir* for input files.
- help, -h  
Display help and exit successfully.
- language=*lang*, -l *lang*  
Specify the language of input files: either latex or texinfo.
- max-iterations=*n*  
Limits the number of iterations to prevent endless processing. The default for *n* is 5.
- mkidx-option=*option*  
Pass *option* to the index generator.
- pdf, -p  
Use **pdftex** (or **pdflatex**) for processing.
- quiet, -q, -silent, -s  
No screen output unless errors plies -batch).
- run-viewer  
Run a viewer on the resulting DVI (PDF) file.
- src  
Pass -src-specials to the T<sub>E</sub>X compiler.
- texinfo=*cmd*, -t=*cmd*  
Insert *cmd* after @setfilename in copy of input file. Multiple values accumulate.
- tex-option=*option*  
Pass *option* to the compiler.
- verbose, -V  
Print information on what is being done.
- version, -v  
Display version information and exit successfully.
- viewer-option=*option*  
Pass *option* to the viewer.

## Environment Variables

The values of the BIBTEX, LATEX (or PDFLATEX), MAKEINDEX, MAKEINFO, TEX (or PDFTEX), and TEXINDEX environment variables are used to run those commands, if they are set.

## Aliases

### **tex2dvi**

Equivalent to **texify**.

## xetex

## Name

xetex — Unicode-based T<sub>E</sub>X engine

## Synopsis

```
xetex [option...] [file | \command]
```

## Description

Run the X<sub>Y</sub>T<sub>E</sub>X typesetter on *file*, usually creating *file.pdf*. If the file argument has no extension, *.tex* will be appended to it. Instead of a file name, a set of X<sub>Y</sub>T<sub>E</sub>X commands can be given, the first of which must start with a backslash.

X<sub>Y</sub>T<sub>E</sub>X has simple font installation; it can use any installed fonts in the operating system without configuring T<sub>E</sub>X font metric. As a result, X<sub>Y</sub>T<sub>E</sub>X can access font features such as special ligatures and variable font weights.

## Options

### **-alias=*app***

Pretend to be *app*, i.e., set program (and memory dump) name to *app*. This may affect the search paths and other values used. Using this option is equivalent to copying the executable file to *app.exe* and invoking *app.exe*.

### **-aux-directory=*dir***

Set the directory *dir* to which auxiliary files are written. Also look for input files in *dir* first, before along the normal search path.

### **-buf-size=*n***

Set the the maximum number of characters simultaneously present in current lines of open files and in control sequences between `\csname` and `\endcsname`. T<sub>E</sub>X uses the buffer to contain input lines, but macro expansion works by writing material into the buffer and reparsing the line. As a consequence, certain constructs require the buffer to be very large, even though most documents can be handled with a small value.

### **-c-style-errors**

Change the way, error messages are printed. The alternate style looks like error messages from many compilers and is easier to parse for some editors. This option implies `\scrollmode`.

### **-disable-installer**

Disable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiK<sub>T</sub>E<sub>X</sub> Options (see [Section 4.5](#)).

- disable-pipes**  
Disable input (output) from (to) child processes.
- disable-write18**  
Disable the `\write18{command}` construct.
- dont-parse-first-line**  
Disable checking whether the first line of the main input file starts with `%&`.
- enable-etex**  
Enable eTeX extensions.
- enable-installer**  
Enable automatic installation of missing packages. Specifying this option overwrites the global configuration setting in MiKTeX Options (see [Section 4.5](#)).
- enable-mltex**  
Enable MLTeX extensions such as `\charsubdef`.
- enable-pipes**  
Enable input (output) from (to) child processes.
- enable-write18**  
Fully enable the `\write18{command}` construct. It is only partially enabled by default to avoid security problems. When fully enabled, the command (which undergoes the usual TeX expansions) is passed to the command interpreter. The output of the command is not diverted anywhere, so it will not appear in the log file. The command execution either happens at `\output` time or right away, according to the absence or presence of the `\immediate` prefix.
- error-line=n**  
Set the width of context lines on terminal error messages.
- extra-mem-bot=n**  
Set the extra size (in memory words) for large data structures like boxes, glue, breakpoints, et al. Relevant only after the memory dump file has been read.
- extra-mem-top=n**  
Set the extra size (in memory words) for chars, tokens, et al. Relevant only after the memory dump file has been read.
- font-max=n**  
Set the maximum internal font number.
- font-mem-size=n**  
Set the size, in TeX memory words, of the font memory.
- half-error-line=n**  
Set the width of first lines of contexts in terminal error messages.
- halt-on-error**  
Quit after the first error.
- hash-extra=n**  
Set the extra space for the hash table of control sequences (which allows 10K names as distributed).
- help**  
Give help and exit.
- include-directory=dir**  
Prefix *dir* to the search path.
- initialize**  
Become the *INI* variant of the compiler.
- interaction=mode**  
Set the interaction mode. Must be one of `batchmode`, `nonstopmode`, `scrollmode` and `errorstopmode`. The meaning of these modes is the same as the corresponding commands.
- job-name=name**  
Set the name of the job (`\jobname`). This has an affect on the output file names.

- job-time=file**  
Set the time-stamp of all output files equal to *file*'s time-stamp.
- main-memory=n**  
Change the total size (in memory words) of the main memory array. Relevant only while creating memory dump files.
- max-in-open=n**  
Set the maximum number of input files and error insertions that can be going on simultaneously.
- max-print-line=n**  
Set the width of longest text lines output; should be at least 60.
- max-strings=n**  
Set the maximum number of strings.
- nest-size=n**  
Set the maximum number of semantic levels simultaneously active.
- no-c-style-errors**  
Don't change the way, error messages are printed.
- no-pdf**  
Generate XDV (extended DVI) output rather than PDF
- output-directory=dir**  
Create output files in *dir*. This implies `-include-directory=dir`.
- output-driver=cmd**  
Use *cmd* as the XDV-to-PDF driver instead of **xdvipdfmx**.
- papersize=string**  
Set PDF media size to *string*.
- param-size=n**  
Set the the maximum number of simultaneous macro parameters.
- parse-first-line**  
Check whether the first line of the main input file starts with `%&`, and parse if it does. This can be used to specify extra command-line options.
- pool-size=n**  
Set the maximum number of characters in strings, including all error messages and help texts, and the names of all fonts and control sequences.
- quiet**  
Suppress all output, except errors.
- record-package-usages=file**  
Record all package usages and write them into *file*.
- recorder**  
Enable the file name recorder. This leaves a trace of the files opened for input and output in a file with the extension `.fls`.
- restrict-write18**  
Partially enable the `\write18{command}` construct.
- save-size=n**  
Set the the amount of space for saving values outside of current group.
- src-specials**  
Embed source file information (source specials) in the DVI file.
- stack-size=n**  
Set the maximum number of simultaneous input sources.
- string-vacancies=n**  
Set the minimum number of characters that should be available for the user's control sequences and font

names, after the compiler's own error messages are stored. Must be at least 25000 less than `pool_size`, but doesn't need to be nearly that large.

`-synctex=n`

Generate SyncTeX data for previewers if nonzero.

`-time-statistics`

Show processing time statistics.

`-trace[=tracestreams]`

Enable trace messages. The *tracestreams* argument, if specified, is a comma-separated list of trace stream names ([Chapter 9, "Trace Streams"](#)).

`-trie-size=n`

Set the amount of space for hyphenation patterns.

`-undump=name`

Use *name* as the name of the format to be used, instead of the name by which the program was called or a

`%&`

line.

`-version`

Show version information and exit.

## Environment

TEXINPUTS

Extra paths to locate TeX `\input` and `\openin` files.

TFM FONTS

Extra paths to locate TeX font metric files

## See also

*The X<sub>Y</sub>TeX reference guide*

Run `mthelp xetexref`

# Chapter 7

## Files

### pdftex.cfg

#### Name

pdftex.cfg — configuration Settings for pdfT<sub>E</sub>X

#### Description

pdfT<sub>E</sub>X configurations settings are read from the file `pdftex.cfg` when a format file is being created by pdfT<sub>E</sub>X.

#### CAUTION



Do not edit this file directly. Run `initexmf --edit-config-file pdftex.cfg` to edit configuration settings for pdfT<sub>E</sub>X.

#### Instructions

*This section is “borrowed” from the pdfT<sub>E</sub>X manual.*

A typical `pdftex.cfg` file looks like this, setting up output for A4 paper size and the standard T<sub>E</sub>X offset of 1 inch:

```
compress_level 9
decimal_digits 3
horigin 1 true in
vorigin 1 true in
image_resolution 300
move_chars 1
output_format 1
page_width 210 true mm
page_height 297 true mm
pdf_minorversion 4
pk_resolution 600
```

The configuration file sets default values for these parameters, and they all can be overridden in the T<sub>E</sub>X source file. Dimensions can be specified as `true`, which makes them immune for magnification (when set).

**compress\_level**

This integer parameter specifies the level of text and inline graphics compression. pdfTeX uses Zip compression. A value of 0 means no compression, 1 means fastest, 9 means best, 2..8 means something in between. Just set this value to 9, unless there is a good reason to do otherwise; 0 is great for testing macros that use `\pdfliteral`.

**decimal\_digits**

This integer specifies the preciseness of real numbers in PDF page descriptions. It gives the maximal number of decimal digits after the decimal point of real numbers. Valid values are in range 0..5. A higher value means more precise output, but also results in a much larger file size and more time to display or print. In most cases the optimal value is 2. This parameter does *not* influence the precision of numbers used in raw PDF code, like that used in `\pdfliteral` and annotation action specifications.

**horigin & vorigin**

These dimension parameters can be used to set the offset of the TeX output box from the top left corner of the “paper”.

**image\_resolution**

When pdfTeX is not able to determine the natural dimensions of an image, it assumes a resolution of type 72 dots per inch. Use this variable to change this default value.

**move\_chars**

Although PDF output is claimed to be portable, especially when all font information is included in the file, problems with printing and viewing have a persistent nature. Moving the characters in range 0–31 sometimes helps a lot. When set to 1, characters are only moved when a font has less than 128 glyphs, when set to 2 higher slots are used too.

**output\_format**

This integer parameter specifies whether the output format should be DVI or PDF. A positive value means PDF output, otherwise we get DVI output.

**page\_width & page\_height**

These two dimension parameters specify the output medium dimensions (the paper, screen or whatever the page is put on). If they are not specified, these values are calculated.

**pdf\_minorversion**

Sets the PDF version of the generated file and the latest allowed PDF version of included PDFs. The value 3 tells pdfTeX to set the PDF version to 1.3 and allows only included PDFs with versions less than 1.3. A suitable default value is 4.

**pk\_resolution**

One can use this entry to specify the resolution for bitmap fonts. Nowadays most printers are capable to print at least 600 dots per inch, so this is a reasonable default.

## updmap.cfg

### Name

updmap.cfg — configuration Settings for outline fonts

### Description

The configuration file `updmap.cfg` contains declarative instructions, which will be used to build font map files.



## CAUTION



Do not edit this file directly. Run `initexmf --edit-config-file updmap` to edit configuration settings for outline fonts.

## Instructions

`updmap.cfg` can contain the following instructions:

**dvipsPreferOutline value**

Specifies whether Dvips prefers bitmap fonts or outline fonts if both are available. Valid values are `true` (default) and `false`.

Independent of this setting, outlines can be forced by putting

```
p psfonts_t1.map
```

into a configuration file that Dvips reads. Bitmaps (for the fonts in question) can be forced by putting

```
p psfonts_pk.map
```

into a configuration file. Such configuration files are provided, which can be enabled via

```
dvips -Poutline ...
```

resp.

```
dvips -Ppk ...
```

**LW35 value**

Specifies which fonts for the “Basic 35 LaserWriter Fonts” will be used and how their file names are chosen. Valid values:

**URW** URW fonts with “vendor” file names (e.g., `n0190641.pfb`).

**URWkb**

URW fonts with “berry” file names (e.g., `uhvbo8ac.pfb`). **URWkb** is the default value.

**ADOBE**

Adobe fonts with “vendor” file names (e.g. `hvnbo_...pfb`).

**ADOBEkb**

Adobe fonts with “berry” file names (e.g., `phvbo8an.pfb`).

**dvipsDownloadBase35 value**

Specifies whether Dvips downloads the standard 35 LaserWriter fonts with the document. If these fonts are not downloaded, then they must be available in the PostScript printer (interpreter). Valid values are `true` and `false` (default).

Whatever is specified here, the user can override it by specifying

```
dvips -Pdownload35 ...
```

resp.

```
dvips -Pbuiltin35 ...
```

to either download the LW35 fonts resp. use the build-in fonts.

**pdftexDownloadBase14 value**

Specifies whether pdfT<sub>E</sub>X downloads the base 14 PDF fonts. Valid values are `true` (default) and `false`.

Since some configurations (PostScript / PDF tools / printers) use bad default fonts, it is safer to download the fonts. The PDF files will get bigger, though.

**dvipdfmDownloadBase14** *value*

Specifies whether Dvipdfm downloads the base 14 PDF fonts. Valid values are `true` (default) and `false`.

Since some configurations (PostScript / PDF tools / printers) use bad default fonts, it is safer to download the fonts. The PDF files will get bigger, though.

**Map** *filename*

Arranges that the contents of *filename* will be included in `psfonts.map`.

**MixedMap** *filename*

Arranges that the contents of *filename* will be included in `psfonts.map`, unless `dvipsPreferOutline` is set to `false`.

“Mixed” means that the fonts referenced in the file are available as bitmap and as outline.

# Chapter 8

## Environment variables

### **BIBINPUTS**

Extra paths to locate .bib files.

### **BSTINPUTS**

Extra paths to locate .bst files.

### **MFINPUTS**

Extra paths to locate METAFONT input and openin files.

### **MIKTEX\_REPOSITORY**

Location of the package repository. This can be either a fully qualified path name (a local package repository) or an URL (a remote package repository).

### **MIKTEX\_TRACE**

Comma-separated list of trace stream names (see [Chapter 9, “Trace Streams”](#)). If this variable is set, then MiKTeX programs will write trace messages into the DebugView window.

### **MPINPUTS**

Extra paths to locate METAPOST input files.

### **TEXINPUTS**

Extra paths to locate TeX \input and \openin files.

### **TFM FONTS**

Extra paths to locate TeX font metric files

# Chapter 9

## Trace Streams

- access**  
file tests (`access()`, `stat()`)
- config**  
MiKTeX configuration settings
- core** MiKTeX core library
- curl** cURL library
- dib** device independant bitmaps
- dvibitmap**  
DVI bitmaps
- dvicolor**  
DVI color
- dvifile**  
DVI files
- dvigc**  
DVI garbage collector
- dvihypertex**  
DVI hypertex specials
- dvipage**  
DVI page builder
- dvipkbitmap**  
DVI PK raster operations
- dvipkchar**  
DVI PK characters
- dvipkfont**  
DVI PK fonts
- dvisearch**  
DVI source specials
- dvitfm**  
DVI font metrics
- dvivfchar**  
DVI virtual font characters

**dvivfont**

DVI virtual fonts

**env** environment variables

**error**

error conditions

**extractor**

MiKTeX package archive file extractor

**files** file operations

**filesearch**

file searching

**fndb**

file name database operations

**fontinfo**

font information retrieval

**mem**

TeX & Friends memory allocation

**mmap**

memory mapped files

**mpm**

package manager

**mtprint**

MiKTeX print utility

**packages**

packages

**process**

execution of secondary processes

**tempfile**

temporary files

**time**

execution time

**values**

configuration values

**yap** Yap

# Chapter 10

## TEXMF Run-Time Parameters

### 10.1 All T<sub>E</sub>XMF Programs

```
;; TeX uses the buffer to contain input lines, but macro
;; expansion works by writing material into the buffer and reparsing the
;; line. As a consequence, certain constructs require the buffer to be
;; very large, even though most documents can be handled with a small value.
buf_size=200000
```

```
;; Width of context lines on terminal error messages.
error_line=79
```

```
;; Extra low memory for boxes, glue, breakpoints, etc.
extra_mem_bot=0
```

```
;; Extra high memory for chars, tokens, etc.
extra_mem_top=0
```

```
;; Width of first lines of contexts in terminal error messages;
;; should be between 30 and (error_line - 15).
half_error_line=50
```

```
;; Words of inmemory available.
main_memory=3000000
```

```
;; Width of longest text lines output; should be at least 60.
max_print_line=79
```

```
;; Maximum number of strings.
max_strings=500000
```

```
;; Maximum number of simultaneous macro parameters.
param_size=10000
```

```
;; Pool space free after format loaded.
pool_free=47500
```

```
;; Max number of characters in all strings, including all
;; error messages, help texts, font names, control sequences.
;; These values apply to TeX and MP.
pool_size=3250000
```

```
;; Maximum number of simultaneous input sources.
```

```
stack_size=5000

;; Strings available after format loaded.
strings_free=100

;; Minimum pool space after TeX/MP's own strings; must be at least
;; 25000 less than pool_size, but doesn't need to be nearly that large.
string_vacancies=90000
```

## 10.2 All T<sub>E</sub>X Programs

```
;; Maximum number of input files and error insertions that can be going
;; on simultaneously.
max_in_open=50

;; Maximum number of semantic levels simultaneously active.
nest_size=500

;; Space for saving values outside current group.
save_size=50000

;; Space for hyphenation patterns.
trie_size=700000

;; Total number of fonts.
font_max=9000

;; Words of font info for TeX (total size of all TFM files, approximately).
font_mem_size=3000000

;; Extra space for the hash table of control sequences (which allows 10K
;; names as distributed).
hash_extra=200000

;; Prime number of hyphenation exceptions.
hyph_size=8191
```

## 10.3 Ω

```
ocp_buf_size=500000
ocp_listinfo_size=1000
ocp_list_list_size=1000
ocp_lstack_size=1000
ocp_stack_size=10000
trie_op_size=35111
```

## 10.4 pdfT<sub>E</sub>X

```
pdf_mem_size=10000
obj_tab_size=1000
dest_names_size=131072
```

```
pdf_os_buf_size=1
```

## 10.5 METAFONT & METAPOST

```
;; Size of stack for bisection algorithms;  
;; should probably be left at this value.  
bistack_size=1500
```

```
;; Maximum number of ligature/kern steps, must be  
;; at least 255 and at most 32510.  
lig_table_size=15000
```

```
;; Maximum number of knots between breakpoints of a path.  
path_size=10000
```

## 10.6 METAFONT

```
;; Number of autorounded points per cycle.  
max_wiggle=1000
```

```
;; Space for storing moves in a single octant.  
move_size=20000
```

## 10.7 METAPOST

```
;; Number of words for TFM information for text fonts.  
font_mem_size=10000
```



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