

# **HOWTO install MusiX<sub>T</sub>E<sub>X</sub>**

## **under Linux/Unix**

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# 1 Updating existing MusiX<sub>TEX</sub> software

Start by unpacking the latest version of the MusiX<sub>TEX</sub> distribution, for example <http://icking-music-archive.org/software/musixtex/musixtex-T112.tar.gz> into a temporary directory, for example `‘/usr/local/src’`. To perform the unpacking say

```
tar -zxf musixtex-T112.tar.gz
```

The result will be a new directory `‘/usr/local/src/musixtex-T103’`.

You’ll need to know the locations of the MusiX<sub>TEX</sub> macros and METAFONT font sources. Use the command

```
kpsewhich musixtex.tex
```

to look up the directory storing the MusiX<sub>TEX</sub> macros. The output will be something like `‘/usr/share/texmf/tex/generic/musixtex/musixtex.tex’`.

Use the command

```
kpsewhich musix20.mf
```

to look up the directory storing the MusiX<sub>TEX</sub> METAFONT fonts sources. The output will be something like `‘/usr/share/texmf/fonts/source/public/musixtex/musix20.mf’`

In the following text replace `‘/usr/share/texmf/tex/generic/musixtex/’` and `‘/usr/share/texmf/fonts/source/public/musixtex/’` with the actual pathes of `‘musixtex.tex’` and `‘musix20.mf’` resp.

## 1.1 MusiX<sub>TEX</sub> macros

From the subdirectory `‘tex’` of the MusiX<sub>TEX</sub> distribution copy all files to `‘/usr/share/texmf/tex/generic/musixtex/’`.

## 1.2 MusiX<sub>TEX</sub> bitmapped fonts

From the subdirectory `‘mf’` of the MusiX<sub>TEX</sub> distribution copy all files to `‘/usr/share/texmf/fonts/source/public/musixtex/’`. Use the command

```
kpsewhich musix20.tfm
```

to look up the directory storing the MusiX<sub>TEX</sub> font metric files. The output will be something like `‘/usr/share/texmf/fonts/tfm/public/musixtex/musix20.tfm’`. Then either delete all files from the directory `‘/usr/share/texmf/fonts/tfm/public/musixtex/’` or copy all files from the directory `‘tfm’` of the MusiX<sub>TEX</sub> distribution.

If you just delete the files from `‘/usr/share/texmf/fonts/tfm/public/musixtex/’` then they will be regenerated by <sub>TEX</sub> when you start processing your MusiX<sub>TEX</sub> source files.

## 1.3 MusiX<sub>TEX</sub> type 1 fonts

You should consider also installing Takanori Uchiyama’s type 1 versions of the MusiX<sub>TEX</sub> fonts which allow you to generate high quality pdf output from your MusiX<sub>TEX</sub> sources. Begin by downloading and unpacking the font distribution <http://icking-music-archive.org/software/musixtex/musixps-unix.tar.gz>. See [unpacking tar archives], page 1. Then follow the instructions in the section “**3. INSTALLATION**” of the accompanying file `‘README’`

## 1.4 Updating the $\TeX$ search path

In order to tell  $\TeX$  where to look for the MusiX $\TeX$  files update the  $\TeX$  file search database by saying as root

```
mktextlsr
```

or

```
texhash
```

## 2 Installing new MusiX $\TeX$ software

### 2.1 Installing from *rpm* distribution

For some types of *linux* there is an *rpm* distribution of MusiX $\TeX$ , release T101 available. Download the file

<http://icking-music-archive.org/software/musixtex/musixtex-T101-1.i386.rpm> into a temporary directory, for example `/usr/local/src` and say as root

```
rpm -i musixtex-T101-1.i386.rpm
```

You may later want to update macros and fonts to the latest version of MusiX $\TeX$ . See [Updating existing MusiX $\TeX$  software], page 1.

### 2.2 Setting up a “private” TEXMF tree

$\TeX$  macros and fonts coming with MusiX $\TeX$  are additions to the standard  $\TeX$  distribution. In order to keep the MusiX $\TeX$  stuff independent of  $\TeX$  you may want to create a directory structure separate from that of the base  $\TeX$  installation. If for example  $\TeX$  has been installed within the directory structure `/usr/share/texmf` then you could create a “private” structure `/usr/local/share/texmf` for storing all  $\TeX$  macros and fonts belonging to MusiX $\TeX$ .

However, you must tell  $\TeX$  where to search for files in `/usr/share/texmf`. This is done in the configuration file `texmf.cnf` the location of which you may look up by saying

```
kpsewhich texmf.cnf
```

the output of which will be something like `/usr/share/texmf/web2c/texmf.cnf`.

#### 2.2.1 A “private” TEXMF tree for all users

Below follows an excerpt from a  $\TeX$  installation `texmf.cnf` containing some commented out (`%` = comment) examples of adding “private” search directory structures for  $\TeX$ . If you have root root privileges you may edit `texmf.cnf` as shown below by defining the environment variable `TEXMFLOCAL` and setting the overall environment variable `TEXMF` to incorporate `TEXMFLOCAL`.

```
% The main tree, which must be mentioned in $TEXMF, below:
TEXMFMAIN = /usr/share/texmf
```

```

%   TEXMFLOCAL = /usr/share/texmf.local
TEXMFLOCAL = /usr/local/share/texmf

% If defined, teTeX's texconfig stores modifications here (instead of the
% TEXMFMAIN tree).
%   VARTEXMF = /usr/share/texmf-var

% User texmf trees can be catered for like this...
%   HOMETEXMF = $HOME/texmf

% Now, list all the texmf trees. If you have multiple trees you can
% use shell brace notation, like this:
%   TEXMF = {$HOMETEXMF,!!$TEXMFLOCAL,!!$TEXMFMAIN}
% The braces are necessary. If you set VARTEXMF, you also have to
% - list $VARTEXMF in the TEXMF definition;
% - make sure that $VARTEXMF precedes $TEXMFMAIN in the TEXMF definition.
TEXMF = {!!$TEXMFLOCAL,!!$TEXMFMAIN}

```

When you have finished editing ‘texmf.cnf’ say as root

```
mktextlsr
```

or

```
texhash
```

to update the  $\TeX$  file search database to reflect the new TEXMFLOCAL directory structure.

## 2.2.2 A “private” TEXMF tree for single users

On some unix machines the global  $\TeX$  configuration file ‘texmf.cnf’ may have defined an environment variable HOMETEXMF as ‘\$HOME/texmf’ and made it part of the environment TEXMF. In that case you’ll be able to establish your own “private” TEXMF tree by creating a directory ‘texmf’ in your home directory. You should also initially add the directories ‘\$HOME/texmf/tex’ and ‘\$HOME/texmf/fonts’ for storing  $\TeX$  files and METAFONT font definitions resp.

You may install all files belonging to MusiX $\TeX$  within your “local” ‘texmf’ directory structure. Don’t forget to make these - and other files added to ‘\$HOME/texmf’ - known to the  $\TeX$  file search database by saying

```
mktextlsr $HOME/texmf
```

or

```
texhash $HOME/texmf
```

If the global  $\TeX$  environment HOMETEXMF has not been defined you should ask the system administrator to do so. Alternatively you may define your own  $\TeX$  environment variables TEXINPUTS (search path for  $\TeX$  files) and MFINPUTS (search path for METAFONT font definitions). If you’re using sh as your shell interpreter add this line to your configuration file ‘\$HOME/.profile’ (or to ‘\$home/.bash\_profile’ if you’re using bash)

```

TEXINPUTS=".:$HOME/texmf/tex/"
MFINPUTS=".:$HOME/texmf/fonts/"

```

```
export TEXINPUTS MFINPUTS
```

If you're using `cs`h or `tc`sh add this line to your configuration file `‘$HOME/.login’`

```
setenv TEXINPUTS ".:$HOME/texmf/tex/"
setenv MFINPUTS ".:$HOME/texmf/fonts/"
```

The two slashes after the path names cause `TEX` to search all directories under `‘$HOME/texmf’`.

## 2.3 MusiX<sub>TEX</sub> macros

Start by unpacking the latest version of the MusiX<sub>TEX</sub> distribution, for example `‘musixtex-T112.tar.gz’` into a temporary directory. See [unpacking tar archives], page 1.

In your “private” `TEXMF` tree create a directory `‘tex/musixtex’`. Copy all files from the subdirectory `‘tex’` of the MusiX<sub>TEX</sub> distribution to `‘tex/musixtex’`.

## 2.4 MusiX<sub>TEX</sub> bitmapped fonts

In your “private” `TEXMF` tree create a directory `‘fonts/source/musixtex’`. Copy all files from the subdirectory `‘mf’` of the MusiX<sub>TEX</sub> distribution to `‘fonts/source/musixtex’`.

## 2.5 MusiX<sub>TEX</sub> type 1 fonts

You should consider also installing Takanori Uchiyama’s type 1 versions of the MusiX<sub>TEX</sub> fonts which allow you to generate high quality pdf output from your MusiX<sub>TEX</sub> sources. In order to do so download and unpack the fonts distribution <http://mirrors.sunsite.dk/ctan/fonts/musixtex/ps-type1/musixps-unix.tar.gz>. In your “private” `TEXMF` tree create a directory `‘fonts/type1/musixtex’`. Then follow the instructions from point 3 of section “**3. INSTALLATION**” of the accompanying file `‘README’`.

## 2.6 Updating the `TEX` search path

In order to tell `TEX` where to look for the MusiX<sub>TEX</sub> files you must update the `TEX` file search database of your “private” `TEXMFLOCAL` by saying

```
mktexlsr /usr/local/share/texmf
```

or

```
texhash /usr/local/share/texmf
```

where `‘/usr/share/texmf’` must be replaced with the actual path of your “private” `TEXMFLOCAL` directory structure.

## 2.7 Setting up a local PATH environment

If you're doing a single user MusiX<sub>TEX</sub> installation you'll need to install executable files belonging to MusiX<sub>TEX</sub> so that your shell interpreter may look them up in the program search path `PATH`. If it does not already exist then create a directory `'bin'` in your home directory for storing executable files. Check whether the `PATH` environment includes this directory by saying

```
echo $PATH
```

If the output contains something like

```
':/home/christian/bin:/usr/local/bin:'
```

then your shell interpreter will first look for executable files in your own `'bin'` directory.

If `'/home/christian/bin'` doesn't show up you'll need to add `'$HOME/bin'` to the `PATH` environment. If you're using `sh` as your shell interpreter add this line to your configuration file `'$HOME/.profile'` (or to `'$home/.bash_profile'` if you're using `bash`)

```
PATH="$PATH:$HOME/bin"
export PATH
```

If you're using `csh` or `tcsh` add this line to your configuration file `'$HOME/.login'`

```
setenv PATH "$PATH:$HOME/bin"
```

## 2.8 The MusiX<sub>TEX</sub> program *musixflx*

Processing MusiX<sub>TEX</sub> sourcefiles requires a programme `musixflx` that must be compiled from a c-source file `'musixflx.c'` found in the directory `'systems/c-source'` of the MusiX<sub>TEX</sub> distribution.

The compilation is done by saying

```
gcc musixflx.c -o musixflx
```

The resulting binary executable file `'musixflx'` must be copied to a directory listed in your environment `PATH`, for example `'/usr/local/bin'` or `'$HOME/bin'`. See [Setting up a local `PATH` environment], page 5.

## 2.9 The MusiX<sub>TEX</sub> manual

In your "private" `TEXMF` tree create a directory `'doc/musixtex'`. Copy all files from the subdirectory `'doc'` of the MusiX<sub>TEX</sub> distribution to `'doc/musixtex'`. The MusiX<sub>TEX</sub> manual has been compiled into the file `'musixdoc.dvi'` which you may view on screen with the programme `'xdvi'`.

In order to generate a pdf version of the manual say

```
pdflatex musixdoc.tex
musixflx musixdoc.tex
pdflatex musixdoc.tex
```

To get a reasonable result out of using the command `pdflatex` type 1 fonts must be installed. See [MusiX<sub>T</sub>E<sub>X</sub> type 1 fonts], page 1. If you have only bitmapped fonts installed you should use the command `latex` instead. The result will be a *postscript* document. You may also generate a *postscript* manual from the file ‘`musixdoc.dvi`’ by saying

```
dvips musixdoc.dvi -o musixdoc.ps
```

## 3 Installing *PMX*

### 3.1 Compiling the ‘`pmxab`’- and ‘`scor2prt`’ sources

If you can’t install from an *rpm* distribution or if you want a *PMX* release with no *rpm* package available download a *PMX* source distribution, for example <http://icking-music-archive.org/software/pmx/pmx2412.zip> into a temporary directory, for example ‘`/usr/local/src/pmx2412`’ and unpack it.

```
unzip -axL pmx2412.zip
```

#### 3.1.1 Compiling the *FORTRAN* source files

You’ll need to perform a few edits of both fortran sources. Locate in each source file the lines containing references to `getarg`. That’ll be something like

```
c      call getarg(1,jobname,idum) ! May need to replace this w/ next line
      call getarg(1,jobname)
```

Do as indicated in the comment text ‘May need to replace this w/ next line’ so that the lines now look like this

```
c      call getarg(1,jobname,idum) ! May need to replace this w/ next line
      call getarg(1,jobname)
```

There are two such pairs of lines in ‘`pmxab.f`’ and one in ‘`scor2prt.f`’ The letter ‘`c`’ in front of the line makes the whole line a comment which doesn’t become compiled.

##### 3.1.1.1 Compiling with ‘`g77`’

On some *unix* computers it may be sufficient to compile the *FORTRAN* sources edited as above described with the *FORTRAN* compiler ‘`g77`’ coming with the ‘`gcc`’ c-compiler. In fact ‘`g77`’ translates the *FORTRAN* into *C*, then compiles the *C*-source with ‘`gcc`’, but all this happens transparently. To use this method say

```
g77 pmxab.f -o pmxab
```

and

```
g77 scor2prt.f -o scor2prt
```



### 3.1.1.2 Compiling with ‘f2c’

Some users have encountered problems with a ‘g77’-compiled ‘pmxab’. In that case you’ll have to do the compilation in two separate steps, 1. converting the *FORTRAN* sources to *C* sources and 2. compiling the resulting *C* sources.

In order to do this you must make sure that the utility to convert *FORTRAN* sources to *C* sources, *f2c* is installed on your computer. For some types of *linux* there are *rpm* distributions of *f2c* available. See [unpacking rpm packages], page 2. Otherwise you’ll have to install *f2c* from the source distribution which you may download from <ftp://netlib.bell-labs.com/netlib/f2c>

To perform the FORTRAN-to-C conversion say

```
f2c pmxab.f -Nx400 -Nn802
```

and then

```
gcc pmxab.c -lf2c -lm -o pmxab
```

Perform the same two steps with ‘scor2prt.f’.

### 3.1.2 Installing ‘pmxab’ and ‘scor2prt’

The resulting binary executable files ‘pmxab’ and ‘scor2prt’ must be copied to a directory listed in your environment *PATH*, for example ‘/usr/local/bin’. If you’re doing a single user installation you should copy ‘pmxab’ and ‘scor2prt’ to ‘\$HOME/bin’. See [Setting up a local *PATH* environment], page 5.

## 3.2 Installing the *PMX* MusiX $\TeX$ macros

If you have created a “private” *TEXMFLOCAL* directory structure then copy the file ‘pmx.tex’ from the *PMX* source distribution to the directory where you store the MusiX $\TeX$  macros. See [Setting up *TEXMFLOCAL*], page 2. Otherwise copy ‘pmx.tex’ to any directory within the *TEXMF* directory structure, for example ‘/usr/share/texmf/tex/generic/musixtex/’.

Don’t forget to update the  $\TeX$  file search database by saying as root

```
mktexlsr
```

or

```
texhash
```

## 3.3 The *PMX* manual

Pdf versions of the *PMX* manual and reference card are available as <http://icking-music-archive.org/software/pmx/pmx240.pdf> and <http://icking-music-archive.org/software/pmx/ref240.pdf> .

## 4 Installing *M-Tx*

### 4.1 Compiling the ‘prepmx’ source

Download the *M-Tx* source distribution <http://icking-music-archive.org/software/mtx/mtx054b.tar.gz> into a temporary directory, for example ‘`/usr/local/src`’ and unpack it. The result is a directory ‘`mtx054b`’. See [unpacking tar archives], page 1.

Compile the C-source files by saying

```
make
and - as root
make install
```

You may want to edit the upper line of ‘`Makefile`’ to change the default target install directory `/usr/local/bin` to meet your needs. If you’re doing a single user installation you should set the install directory to ‘`$HOME/bin`’. See [Setting up a local PATH environment], page 5.

### 4.2 The *M-Tx* manual

A pdf version of the *M-Tx* manual is available as <http://icking-music-archive.org/software/mtx/mtx054b/mtxdoc.pdf>

### 4.3 Installing the *M-Tx* MusiX $\TeX$ macros

If you have created a “private” `TEXMFLOCAL` directory structure then copy the file ‘`mtx.tex`’ from the *M-Tx* source distribution to the directory where you store the MusiX $\TeX$  macros. See [Setting up `TEXMFLOCAL`], page 2. Otherwise copy ‘`mtx.tex`’ to any directory within the `TEXMF` directory structure, for example ‘`/usr/share/texmf/tex/generic/musixtex/`’.

Don’t forget to update the  $\TeX$  file search database by saying as root

```
mktextlsr
or
texhash
```

## 5 *musiclyr*

Processing MusiX $\TeX$  -, *PMX*- and *M-Tx* source files involving lyrics requires the *musiclyr* macros to be installed. In a temporary directory, for example ‘`/usr/local/src`’ create a directory ‘`Musixlyr`’. Download the distribution archive <http://icking-music-archive.org/software/musixtex/add-ons/musixlyr21c.tgz> to that directory and unpack it. See [unpacking tar archives], page 1.

## 5.1 Installing the *musiclyr* macros

If you have created a “private” TEXMFLOCAL directory structure then copy the file ‘musiclyr.tex’ from the musiclyr distribution to the directory where you store the MusiX<sub>T</sub>E<sub>X</sub> macros. See [Setting up TEXMFLOCAL], page 2. Otherwise copy ‘musiclyr.tex’ to any directory within the TEXMF directory structure, for example ‘/usr/share/texmf/tex/generic/musixtex/’.

## 5.2 The *musiclyr* manual

In order to generate a pdf version of the manual say

```
pdflatex mxlyrdoc.tex
musixflx mxlyrdoc.tex
pdflatex mxlyrdoc.tex
```

To get a reasonable result out of using the command `pdflatex` type 1 fonts must be installed. See [MusiX<sub>T</sub>E<sub>X</sub> type 1 fonts], page 1. If you have only bitmapped fonts installed you should use the command `latex` instead. The result will be a *postscript* document. You may also generate a *postscript* manual from the file ‘mxlyrdoc.dvi’ by saying

```
dvips mxlyrdoc.dvi -o mxlyrdoc.ps
```

---

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