HOWTO install MusiXTeX

under Linux/Unix

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1 Updating existing MusiXTEX software

Start by unpacking the latest version of the MusiXTEX distribution, for example `http://icking-music-archive.sunsite.dk/software/musixtex/musixtex-T103.tar.gz` into a temporary directory, for example '`/usr/local/src`'. To perform the unpacking say

```
tar -zxf musixtex-T103.tar.gz
```

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

You'll need to know the locations of the MusiXTEX macros and METAFONT font sources. Use the command

```
kpsewhich musixtex.tex
```

to look up the directory storing the MusiXTEX 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 MusiXTEX 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 MusiXTEX macros

From the subdirectory '`tex`' of the MusiXTEX distribution copy all files to '`/usr/share/texmf/tex/generic/musixtex/`'.

1.2 MusiXTEX bitmapped fonts

From the subdirectory '`mf`' of the MusiXTEX 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 MusiXTEX 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 MusiXTEX distribution.

If you just delete the files from '`/usr/share/texmf/fonts/tfm/public/musixtex/`' then they will be regenerated by TEX when you start processing your MusiXTEX source files.

1.3 MusiXTEX type 1 fonts

You should consider also installing Takanori Uchiyama's type 1 versions of the MusiXTEX fonts which allow you to generate high quality pdf output from your MusiXTEX sources. Begin by downloading and unpacking the font distribution `http://mirrors.sunsite.dk/ctan/fonts/musixtex/ps-type1/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 MusiXTEX files update the TEX file search database by saying as root

```
mktexlsr
```

or

```
texhash
```

2 Installing new MusiXTEX software

2.1 Installing from *rpm* distribution

For some types of *linux* there is an *rpm* distribution of MusiXTEX , release T101 available. Download the file `http://icking-music-archive.sunsite.dk/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 MusiXTEX . See [Updating existing MusiXTEX software], page 1.

2.2 Setting up a "private" TEXMF tree

TEX macros and fonts coming with MusiXTEX are additions to the standard TEX distribution. In order to keep the MusiXTEX 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 MusiXTEX .

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 teTEX installation '`texmf.cnf`' containing some commented out ('`%`' = comment) examples of adding "private" search directory structures for TEX . If you have root root priviliges 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

```
mktexlsr
```

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 MusiXTEX within your "local" '`texmf`' directory structure. Don't forget to make these - and other files added to '`$HOME/texinf`' - known to the TEX file search database by saying

```
mktexlsr $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 `csh` or `tcsh` 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 MusiXTEX macros

Start by unpacking the latest version of the MusiXTEX distribution, for example '`musixtex-T103.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 MusiXTEX distribution to '`tex/musixtex`'.

2.4 MusiXTEX bitmapped fonts

In your "private" `TEXMF` tree create a directory '`fonts/source/musixtex`'. Copy all files from the subdirectory '`mf`' of the MusiXTEX distribution to '`fonts/source/musixtex`'.

2.5 MusiXTEX type 1 fonts

You should consider also installing Takanori Uchiyama's type 1 versions of the MusiXTEX fonts which allow you to generate high quality pdf output from your MusiXTEX 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 MusiXTEX 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 MusiXTEX installation you'll need to install executable files belonging to MusiXTEX so that your shell interpreter may look them up in the program search path `PATH`. If it does not already exists 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 MusiXTEX program *musixflx*

Processing MusiXTEX 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 MusiXTEX 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 MusiXTEX manual

In your "private" `TEXMF` tree create a directory '`doc/musixtex`'. Copy all files from the subdirectory '`doc`' of the MusiXTEX distribution to '`doc/musixtex`'. The MusiXTEX 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 [MusiXTEX type 1 fonts], page 2. 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 Installing from *rpm* distribution

For some types of *linux* there is an *rpm* distribution of *PMX*, version 2.20 available. Download the file `http://icking-music-archive.sunsite.dk/software/pmx/pmx-2.20-1.i586.rpm` into a temporary directory, for example '`/usr/local/src`' and say as root

```
rpm -i pmx-2.20-1.i586.rpm
```

There is also an *rpm* distribution of *PMX*, beta release 2.305, `http://icking-music-archive.sunsite.dk/software/pmx/pmx-2.3.0.5-1.i386.rpm`

3.2 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.sunsite.dk/software/pmx/pmx-unix-230.tgz` into a temporary directory, for example '`/usr/local/src`' and unpack it. The result is a directory '`pmx-230`'. See [unpacking tar archives], page 1.

3.2.1 Compiling using 'Makefile'

If your operating system is *linux* you may be able to compile *pmxab* and *scor2prt* by simply saying

```
make
```

3.2.2 Compiling the *FORTRAN* source files

The f2c libraries '`libF77.o`' and '`libI77.o`' referenced to in the '`Makefile`' may not necessarily be compatible with your type of *unix*. In that case you must compile the *FORTRAN* sources '`pmxab.f`' and '`scor2prt.f`' yourself "from the ground up".

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

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

3.2.2.1 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
```

3.2.2.2 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`'.

3.2.3 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.

3.3 Installing the *PMX* MusiXTEX 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 MusiXTEX 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
```

3.4 The *PMX* manual

Pdf versions of the *PMX* manual and reference card are available as http://icking-music-archive.sunsite.dk/software/pmx/pmx230.pdf and http://icking-music-archive.sunsite.dk/software/pmx/ref230.pdf .

4 Installing *M-Tx*

4.1 Compiling the 'prepmx' source

Download the *M-Tx* source distribution http://icking-music-archive.sunsite.dk/software/mtx/mtx052-unix.tar.gz into a temporary directory, for example '/usr/local/src' and unpack it. The result is a directory 'mtx052-unix'. 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.sunsite.dk/software/mtx/mtxdoc.pdf`

5 *musixlyr*

Processing MusiXTEX -, *PMX*- and *M-Tx* source files involving lyrics requires the `musixlyr` 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.sunsite.dk/software/musixtex/add-ons/musixlyr20.tgz` to that directory and unpack it. See [unpacking tar archives], page 1.

5.1 Installing the *musixlyr* macros

If you have created a "private" `TEXMFLOCAL` directory structure then copy the file '`musixlyr.tex`' from the `musixlyr` distribution to the directory where you store the MusiXTEX macros. See [Setting up `TEXMFLOCAL`], page 2. Otherwise copy '`musixlyr.tex`' to any directory within the `TEXMF` directory structure, for example '`/usr/share/texmf/tex/generic/musixtex/`'.

5.2 The *musixlyr* 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 [MusiXTEX type 1 fonts], page 2. 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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