Table of Contents

Converting Files under Linux....1
Convert Images....1
Convert between Windows/Mac and Linux text files....1
Convert text files between different character encodings....1
Convert PS and EPS Files....2
Convert GRIB into NETCDF files....3
Convert PDF Files....3
Manipulating PDF Files....4
Convert Matlab EPS Files....5
Convert tar files into zip files....5
Convert MS Excel and MS Word files....5
Create a Movie out of Images....6
Convert Movie/Animation Files....7
Convert Audio Files....7
Extract Audio from a Video File....8

Converting Files under Linux

Convert Images

- Use the powerful command **convert**

```
convert file.jpg file.gif
convert file.tiff file.jpg
```

The command **convert** can convert between several formats and has a lot of options, see **man convert**

- Resizing an image

```
convert -resize 50%       file.jpg file_small.jpg
convert -resize 200x200   file.jpg file_small.jpg      # ratio will be kept
convert -resize 1024x768! file.jpg file_desktop.jpg    # ! = force the new size
```

- Rotating an image

```
convert -rotate 90 file.jpg file_new.jpg
```

Convert between Windows/Mac and Linux text files

- Use **dos2unix** and **unix2dos**

```
dos2unix win.txt linux.txt
mac2unix mac.txt linux.txt
unix2dos linux.txt win_mac.txt
```

Convert text files between different character encodings

- Use **iconv** to convert a text file

```
iconv --from-code=UTF-8 --to-code=ISO-8859-1 text_in_utf-8.txt > text_in_iso-8859-1.
```

Convert PS and EPS Files

There is normally more than one way to convert files. Just try out which tool produces the best results in your case.

- Convert PS to PDF

```
ps2pdf file.ps
ps2pdf -sPAPERSIZE=a4 -dOptimize=true -dEmbedAllFonts=true file.ps
pstoedit file.ps file.pdf
```

- Convert EPS to PDF

```
epstopdf file.eps
pstoedit file.eps file.pdf
```

- Convert PS to EPS

```
ps2eps file.ps
```

- Convert to a "better" PS

```
ps2ps   file.ps  new.ps
eps2eps file.eps new.eps
ps2ps2  file.[ps|eps|pdf] new.ps    # converts to PS level 2
```

- Extract text from PS

```
ps2ascii file.ps file.txt
```

- Convert a postscript file to png

```
gs -r300 -dNOPAUSE -dUseCropBox -dBATCH -sDEVICE=pngalpha -sOutputFile=file.png file
```

- Convert a postscript file to jpg

```
gs -r300 -dNOPAUSE -dUseCropBox -dBATCH -sDEVICE=jpeg -sOutputFile=file.jpg file.ps
```

- Convert a transparent eps (in cmyk) to a png file

```
convert -colorspace rgb file.eps file.png
```

Convert GRIB into NETCDF files

- Use NCL to convert. First load ncl module

```
module load ncl
```

- Rename your GRIB file. The name should have **.grb** as extension

```
mv mygribfile mygribfile.grb
```

- Convert to NETCDF

```
ncl_convert2nc mygribfile.grb
```

  The resulting NETCDF file will be mygribfile.nc

- For more information see http://www.ncl.ucar.edu/Document/Tools/ncl_convert2nc.shtml

Convert PDF Files

- Use **`pdftops`** to convert PDF to PS

```
pdftops file.pdf
```

  Note: **`pdf2ps`** does also convert PDF to PS, but normally the result is worse.

- Extract text from PDF

```
pdftotext file.pdf
# or use ps2ascii
pdftops file.pdf
ps2ascii file.ps file.txt
```

- Convert a PDF file to images (one image per page)

```
pdftoppm file.pdf image
```

  Convert page 2 (**`-f 2`**) to page 5 (**`-l 5`**) with a resoltion of 300 dpi (**`-r 300`**) to five PPM image files

```
pdftoppm -f 2 -l 5 -r 300 file.pdf image
```

- Extract images from PDF files

```
pdfimages file.pdf image
pdfimages -j file.pdf image    # write images if possible as JPEG files
```

- Open the PDF File with an application and save it in a different format. Programs that can open PDF files:

```
abiword
oowriter
```

Manipulating PDF Files

- Use **`pdfedit`** to edit PDF Files

```
pdfedit file.pdf
```

- Joining PDF files

```
pdfunite file1.pdf file2.pdf file-new.pdf
pdfjoin file1.pdf file2.pdf                # alternative
```

- Splitting a PDF file into pages

```
qpdf --split-pages file.pdf %d-out.pdf
```

- Extract certain pages from a PDF. For example page 22-36

```
qpdf input.pdf --pages . 1-10 -- output.pdf
pdftops input.pdf - | psselect -p22-36 | ps2pdf - output_p22-p36.pdf
```

- Extract images from PDF files

```
pdfimages -j file.pdf image
```

- Rotating PDF file

```
pdf90 file.pdf
```

- Put several pages on one page:

```
pdfnup --nup 2x1 file.pdf     # 2 pages side by side
pdfnup --nup 2x2 file.pdf     # 4 pages on one page
```

Convert Matlab EPS Files

- Convert Matlab eps file in a pixel graphic like png, jpg: First convert the eps file into a pdf file. Afterwards convert the pdf file into a png or jpg file

```
epstopdf matlab_plot.eps
convert -density 100 matlab_plot.pdf matlab_plot.png
```

  - Choose a higher number than 100 to get a higher resolution of the image
  - Instead of png you can convert to matlab_plot.jpg

- Convert Matlab eps file into a .emf file (Enhanced Meta File format). emf is still a vector based format and can be imported by openoffice.

```
pstoedit -pta matlab_plot.eps matlab_plot.emf
```

  The crucial option is **`-pta`**, which fixes the ugly looking font when you directly import the eps file into openofffice (**`-pta`** sets correct inter-letter spacing).
  With the above command the boundary box will be still broken (too large). If you first convert it into a pdf file it will be ok.

```
epstopdf matlab_plot.eps
pstoedit -pta matlab_plot.pdf matlab_plot.emf
```

Convert tar files into zip files

- Windows users may not be able to open tar or tar.gz files. The following commands "convert" these files to zip files

```
tar xfv  file.tar    | zip file.zip "-@"
tar xfvz file.tar.gz | zip file.zip "-@"
```

Convert MS Excel and MS Word files

- Convert **xls** (Excel) files to csv (comma-separated values) files:

```
xls2csv -x file.xls -c file.cvs -a UTF-8
```

- Convert MS Word to plain text:

```
abiword --to=txt file.doc
```

- Alternatively open the file with **LibreOffice**.

Create a Movie out of Images

Programs

- **mencoder**: Encoding from multiple input image files: http://www.mplayerhq.hu/DOCS/HTML/en/menc-feat-enc-images.html:
- **convert**: create animated GIFs

Create animated gif with convert

- Animated gif file created from a series of png or gif files (see also **`man convert`**):

```
convert -delay 30 -loop 0 *.png animated.gif
convert -delay 30 -loop 0 *.gif animated.gif
```

mencoder takes jpg or png files as imput. **Note: mencoder needs png with 8bit color depth**, use option **`-depth 8`**

- Convert eps to png files

```
mogrify -format png -depth 8 -alpha off -density 600 -resample 150 *.eps
```

- Convert jpg tp png files and keep the quality

```
mogrify -format png -depth 8 -quality 100 *.jpg
```

Create movies with mencoder (see also **`man mencoder`**)

- Create AVI movie file with MPEG4 codec (fps = frames per second):

```
mencoder mf://*.jpg -mf fps=5 -ovc lavc -o output_mpeg4.avi
mencoder mf://*.png -mf fps=5 -ovc lavc -o output_mpeg4.avi
```

- Create AVI file with XVID codec

```
mencoder mf://*.png -mf fps=5 -ovc xvid -xvidencopts fixed_quant=4  -o output_xvid.a
```

- Create AVI file with X264 codec (use 2 pass mode: pass=1 will analyze the frames, pass=2 will create the movie)

```
mencoder mf://*.png -mf fps=5 -o /dev/null       -ovc x264 -x264encopts pass=1:turbo
mencoder mf://*.png -mf fps=5 -o output_x264.avi -ovc x264 -x264encopts pass=2:turbo
```

- X264 and XVID codecs create smaller and qualitative better files than MPEG4 codec, where has X264 creates smaller files than XVID.
- **Note:** For `mencoder` the file should not be too large. 1000x1000 is still fine

Convert Movie/Animation Files

- Convert MPEG4 movie to Quicktime (qtrle) movie

```
ffmpeg -i output_mpeg4.avi -f mov -vcodec qtrle output.mov
```

- Convert animated GIF into MPEG4 movie. First extract individual pictures out of the animated gif and save them as png files

```
convert animation.gif animation%02d.png
```

  Now create out of the png files a MPEG4 movie

```
mencoder mf://*.png -mf fps=5 -ovc lavc -o output_mpeg4.avi
```

- Converting Flash movie

```
ffmpeg -i myvideo.flv -f avi -vcodec mpeg4 myvideo_mpeg4.avi
```

Convert Audio Files

- Convert WAV to MP3. Set the bit rate with option **`-b`**

```
lame -b 320 file.wav file.mp3
```

- Convert WAV to OGG. Set quality between -1 (very low) and 10 (very high) with option **`-q`**:

```
oggenc -q 8 file.wav
```

- Convert audio files using **`sox`**

```
sox file.mp3 file.ogg
sox file.ogg file.mp3
```

- Convert media files using **`mplayer`**. Mplayer can convert every file format, which he can play, to .wav

```
mplayer -vo null -vc dummy -af resample=44100 -ao pcm:waveheader:file=output.wav inp
```

- Converting a bunch of files using a for loop (works in bash shell only!)

```
for f in *.wav;  do lame -b 320 "$f" "${f%.wav}.mp3"; done
for f in *.flac; do flac -cd "$f" | lame -b 320 - "${f%.flac}.mp3"; done
for f in *.ogg;  do sox "$f" "${f%.ogg}.mp3"; done
```

```
for f in *.ogg;  do oggdec -o - "$f" | lame -b 256 - "${f%.ogg}.mp3"; done
for f in *.wma ; do mplayer -vo null -vc dummy -af resample=44100 -ao pcm:waveheader
```

Extract Audio from a Video File

- Extract MP3 audio from MP4 video

```
for f in *.mp4; do ffmpeg -i "$f" -vn -ar 44100 -ac 2 -ab 320k -f mp3 "${f%.mp4}.mp3
```

- Extract MP3 audio from MKV video

```
for f in *.mkv; do ffmpeg -i "$f" -vn -ar 44100 -ac 2 -ab 320k -f mp3 "${f%.mkv}.mp3
```

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