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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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