

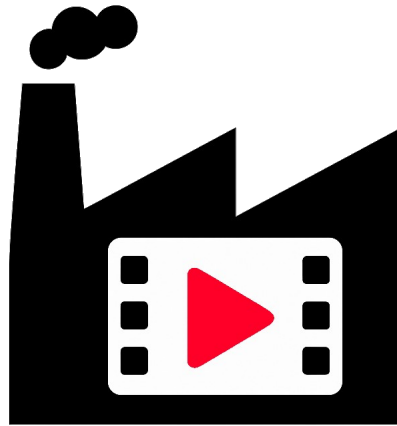
Free Factory QT

Documentation

by

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FreeFactory

Introduction

Welcome to FreeFactory. FreeFactory not just another front end for ffmpeg, but one that fully encompasses the full and rich feature set of ffmpeg. While not everything ffmpeg can theoretically do is represented in the user interface, it allows for manual commands or even manual additions to what is selectable within the GUI making it extremely powerful without (many) cumbersome command lines.

FreeFactory has been around since 2012 and started its life as a collection of BASH scripts, with one watching over a “drop” folder waiting for files to arrive. When a file is dropped into a specified folder, the background process (FreeFactoryConversion) picks it up and processes according to the factory settings for that folder then saves it into a specific output folder.

These folders are specific to the type of output file you need after conversion and linked to a factory and typically look something like this:

```
/video/  
/video/to-flac  
/video/to-mxf-with-captions  
/video/to-client-mp4  
/video/dji-footage
```

In example, you have an audio file that needs converted to .flac, you simply drop one or more of the files into the to-flac folder and they are converted automatically for you to .flac and sent to whatever destination is assigned to that factory. The codec of the input file does not matter, as long as it supported by ffmpeg, which most are. These folders can be local or network folders.

In 2013, FreeFactory got it’s first frontend in the form of a collection of tcl/tk scripts which made building “factories” much easier than doing it by hand. With the exception of getting updated whenever TCL or TK libraries changed and broke things and adding a manual options field, it pretty much remained in this state until recently.

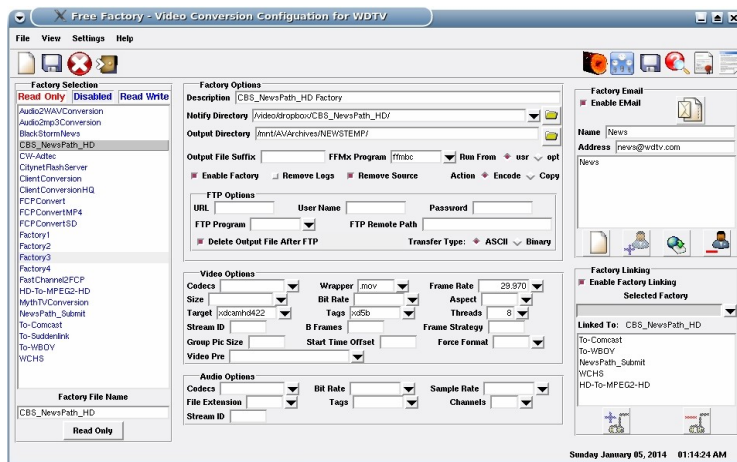


Figure 1: Original user interface using TCL-TK by Karl Swisher

Jump to 2025. I was needing to add some new features to FreeFactory for personal use and found that using TCL/TK a bit cumbersome and dated so we decided to rewrite it in Python3 using QT6. This allowed for easy UI creation (using QT6-Designer) and saved lots of time and code. In fact, because FreeFactoryQT uses a .ui file for the GUI, users can modify and re-arrange it to better suit their needs, if desired, without fear of breaking any python code. This assumes the user is familiar with the qt6-designer workflow.

While FreeFactory can use a background service process to pick up files from folders automatically (it’s now a systemd service) it also now supports direct drag and drop conversion without requiring the background process at all!

It also newly supports Streaming Factories with a built in Stream Manager allowing one to create and stream multiple streams. Of course streaming multiple streams is both CPU and/or GPU intensive so the amount of streams you can actually handle will greatly depend on the power of your hardware. Using your GPU is the way to go when doing this using codecs such as h264_nvenc and hevc_nvenc which leverage such hardware are good examples.

Terminology

- **Factory:** This is a small config file which the Factory Builder will generate for you. It contains all the parameters necessary to create a command structure ffmpeg can use. The default location for these Factories is in /opt/FreeFactory/Factories. This can be changed in the Global Settings of the program.

- **Streaming Factory:** This is the mostly the same as above but contains stream specific parameters that normal Factories do not.

- **Drop Folder:** You create drop folders for dropping media files into for a specific conversion Factory. These are ONLY used by the background service. They are not used at all for Direct Encoding.

- **Direct Encoding:** This means the FreeFactory front end will directly do the encoding itself without the need for the background service. It is a drag and drop function.

NOTE: Needs more added

Manual Installation:

1. Download the .zip file from github.
2. Create a folder in /opt called FreeFactory (it is case sensitive)
3. Decompress the contents of the .zip file into /opt/FreeFactory/
4. (Optional) Create a desktop icon using the /opt/FreeFactory/Pics/FreeFactoryQT.ico file. For the shortcut to work, add the command: `python3 /opt/FreeFactory/bin/main.py`

First Run and Configuring FreeFactory

Requirements:

Python3

PyQT6

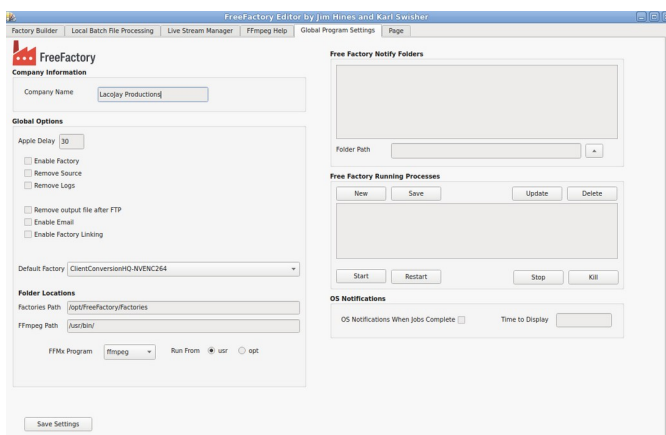
inotifywait (if using the background service)

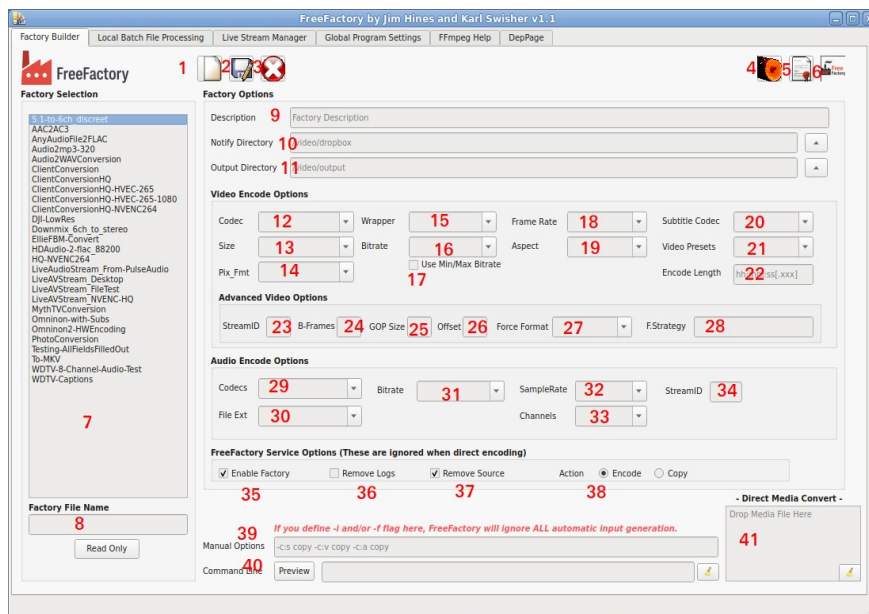
TCL (if using the background service)

First, go to the Global Program Settings tab and simply click Save Settings on the bottom left. This ensures that ~/.freefactoryrc gets created in your HOME directory. The defaults here are fine for now for Linux installations.

You may fill in the Company Name if applicable and choose a default Factory here. This is the factory that you will commonly use the most for both Direct and Batch Encoding, if needed. This default Factory is for local encoding from FreeFactory and has absolutely nothing to do with the FreeFactoryNotify.service. You can also change your Factories folder and the PATH to your ffmpeg install if different than /usr/bin/.

You can also manage the FreeFactoryNotify.service from this tab.





Factory Builder Tab

- New Factory:** This clears all fields in preparation for building a new factory.
- Save Factory:** This saves the current factory to filename (8).
- Delete Factory:** Deletes the currently selected factory.
- Log Viewer:** Views logs generated by the FreeFactory-Service.
- License viewer:** Views the GPLv3 license
- About FreeFactory:**
- Factory List:** Contains a list of all your factories.
- Factory Filename:** Name your factory here.
- Factory Description:** Add a description for your factory here. Be descriptive as once you get a lot of factories, it can avoid confusion.
- Notify Directory:** If you are only planning to use FreeFactory for direct conversion, then you can ignore this field completely. This will not apply to you. This is only used by the FreeFactoryConversion program which is ran by FreeFactory-Notify.service. If you plan on using the Drop Folders, this field is a REQUIREMENT.
- Output Directory:** This is the folder the factory will send you encoded file(s) to. It is used by both the GUI and the background FreeFactory service.
- Video Codec:** If the file you are converting is a video file, you must specify a Codec here. Select copy if you want to keep the original codec and simply change the wrapper. As long as the codec is compatible with the wrapper, no other options are necessary. Any fields left empty will simply default to the input file's settings except for this one. If the codec you need is not in the predefined list, you may type it in manually here. (command line option is -c:v)
- Video Size:** Adjusts the output size or video resolution of the output file. If the size you need is not in the predefined list, you may type it in manually here. (command line option is -s)
- Pix_Fmt:** This is the pixel format used for the codec. Not all pixel formats are compatible with all codecs. Use the Ffmpeg Help tab for more info on specific pixel formats. You may also type in manually here if the pix_fmt you need is not listed. (command line option is -pix_fmt)
- Wrapper:** This will tell Ffmpeg the which wrapper to use for the file type expected at the output.
- Video Bitrate:** This sets the bitrate of the video encoding. (command line option is -b:v)
- Use Min/Max Bitrate:** This locks the minbitrate and maxbitrate values and includes these fields in the FFmpeg command. ie -b:v 50M -minbitrate 50M -maxbitrate 50M
- Video Frame Rate:** Sets the framerate for encoding. If left empty, it will use the frame rate of the input file. (command line option is -r)
- Video Aspect Ratio:** Sets the video aspect ratio. If left empty, it will use the aspect of the input file. (command line option is -aspect)
- Subtitle Codec:** Selects the subtitle codec type.
- Video Presets:** Selects a Video Preset. Usually used for live stream encoding.
- Encode Length:** This is the length to encode. This is very useful for testing factories for long form programming. (command line option is -t)

23. **Video Stream ID:** Sets the stream id for the video stream. (command line option is -streamid:v)
24. **Video B-Frames:** Sets the bi-directional frames. (command line option is -bf)
25. **GOP Size:** Sets the Group of Pictures size. (command line option is -g)
26. **Start Offset:** This tells FFmpeg where to start encoding within the file, in frames. (command line option is -ss)
27. **Force Format:** Forces the format of the output file. ie. can be used to force a mp4 file to flv for streaming. (command line option is -f)
28. **Frame Strategy:** Deprecated. Will be removed.
29. **Audio Codec:** If the file you are converting is an audio file, you must specify a codec here. Select copy if you want to keep the original codec. Any fields left empty will simply default to the input file's settings except for this one. If the codec you need is not in the predefined list, you may type it in manually here. (command line option is -c:a)
30. **Audio File Extension:** Only useful if you are converting audio files. This basically lets FFmpeg decide what to do.
31. **Audio Bitrate:** Sets the bitrate of the audio stream or file. (command line option is -b:a)
32. **Audio Samplerate:** Sets the samplerate of the audio stream or file. (command line option is -ar)
33. **Audio Channels:** Sets the amount of audio channels of the audio stream or file. (command line option is -ac)
34. **Audio Stream ID:** Sets the stream ID of the audio stream when used with other audio or video streams. (command line option is -streamid:a)
35. **Enable Factory:** Only used with the FreeFactory service.
36. **Remove Logs:** Only used with the FreeFactory service.
37. **Remove Source:** Only used with the FreeFactory service.
38. **Action:** Deprecated and needs removed. This is a leftover from the original FreeFactory TCL app and left in for compatibility.
39. **Manual Options:** This field is the REAL power of FreeFactory. While FreeFactory attempts to provide the most used options in the GUI, there is simply no way it can because there are so many. Advanced users can use this field to build complete FFmpeg command line structures, or just add options to your GUI options as well.
40. **Command Line Preview:** This allows you to see the complete FFmpeg command that FreeFactory generates. It combines all the UI selections as well as the Manual Options. You can also copy this line and try it from your shell to test for issues.
41. **Drop Zone:** This allows dropping a file to be converted using the currently selected Factory.