

Adding a Timestamp to a GoPro Video on a Mac

Reference: <https://www.bluebill.net/timestamps.html>

- [Install Pre-Requisites](#)
- [Joining the Videos While Preserving Metadata](#)
- [Revise Scripts](#)
- [Fixing GoPro Video Creation Time](#)
- [Add Timestamp to Video](#)
- [Get Video File Information](#)
- [Scripts](#)
- [References](#)

Install Pre-Requisites

Install ffmpeg, coreutils and jq.

```
brew install ffmpeg
brew install coreutils
brew install jq
```

Joining the Videos While Preserving Metadata

First create a text file (e.g. filesToMerge.txt) with all the chaptered video files that you want to merge into a single video e.g.

```
file GH010097.MP4
file GH020097.MP4
file GH030097.MP4
file GH040097.MP4
```

Next, check the streams in the video files.

```
ffprobe -show_format GH010097.MP4
```

```

Stream #0:0[0x1](eng): Video: h264 (High) (avc1 / 0x31637661), yuvj420p(pc, bt709, progressive), 2704x1520
[SAR 1:1 DAR 169:95], 60002 kb/s, 59.94 fps, 59.94 tbr, 60k tbn (default)
  Metadata:
    creation_time   : 2023-08-09T17:39:29.000000Z
    handler_name    : GoPro AVC
    vendor_id       : [0][0][0][0]
    encoder         : GoPro AVC encoder
    timecode        : 17:38:25:34
Stream #0:1[0x2](eng): Audio: aac (LC) (mp4a / 0x6134706D), 48000 Hz, stereo, fltp, 189 kb/s (default)
  Metadata:
    creation_time   : 2023-08-09T17:39:29.000000Z
    handler_name    : GoPro AAC
    vendor_id       : [0][0][0][0]
    timecode        : 17:38:25:34
Stream #0:2[0x3](eng): Data: none (tmcd / 0x64636D74) (default)
  Metadata:
    creation_time   : 2023-08-09T17:39:29.000000Z
    handler_name    : GoPro TCD
    timecode        : 17:38:25:34
Stream #0:3[0x4](eng): Data: bin_data (gpmd / 0x646D7067), 49 kb/s (default)
  Metadata:
    creation_time   : 2023-08-09T17:39:29.000000Z
    handler_name    : GoPro MET
Stream #0:4[0x5](eng): Data: none (fdsc / 0x63736466), 13 kb/s (default)
  Metadata:
    creation_time   : 2023-08-09T17:39:29.000000Z
    handler_name    : GoPro SOS

```

The above video has 4 streams. Lets try to join streams 0,1 and 3.

```

ffmpeg -f concat -safe 0 -i filesToMerge.txt -c copy -map 0:0 -map 0:1 -map 0:3 -c:v libx264 -pix_fmt yuv420p
video-merged.mp4

```

Revise Scripts

Using the scripts from <https://www.bluebill.net/timestamps.html>

Revise **timestamp.sh** and **correctTime.sh** to use **'gdate'** instead of **'date'**.

See below for revised scripts.

Fixing GoPro Video Creation Time

Check Creation Time

```
./correctTime.sh DIVE_2_1_GH010089.MP4
DIVE_2_1_GH010089.MP4

Video Create Time (Zulu):  2023-06-13T19:12:11.000000Z
Video Create Time (local): 2023-06-13T15:12:11 -0400 (EDT)
-----
Video Create Time (without timezone):2023-06-13T19:12:11
Video Create Time (to local):2023-06-13T19:12:11 -0400 (EDT)
-----
Video Create Time (to UTC):2023-06-13T23:12:11.000000Z

To update the metadata use --update
```

In the above output we see that the local time was recorded as Zulu time. The local time was 19:12:11.

Fix Creation Time

```
./correctTime.sh DIVE_2_1_GH010089.MP4 --update
```

Verify Creation Time

```
./correctTime.sh DIVE_2_1_GH010089.corrected.MP4
DIVE_2_1_GH010089.corrected.MP4

Video Create Time (Zulu):  2023-06-13T23:12:11.000000Z
Video Create Time (local): 2023-06-13T19:12:11 -0400 (EDT)
-----
Video Create Time (without timezone):2023-06-13T23:12:11
Video Create Time (to local):2023-06-13T23:12:11 -0400 (EDT)
-----
Video Create Time (to UTC):2023-06-14T03:12:11.000000Z

To update the metadata use --update
```

Command to Update Creation Time:

```
ffmpeg -I <MOVIE> -c copy -metadata creation_time=2023-06-13-23:12:11.000000Z <OUTPUT>
```

Add Timestamp to Video

```
./timestamp.sh DIVE_2_1_GH010089.corrected.MP4
```

Changes to the timestamp.sh script:

- Removed -vcodec libx265
- Changed location of timestamp to top right corner

```
...
ffmpeg -i "${INPUT}" -vf drawtext="fontsize=30:fontcolor=yellow:text='%{pts\:localtime\:${EPOCH}}':x=(w-text_w) - 10:y=(h-text_h) - 10" -vcodec libx265 -crf 28 "${OUTPUT}"

ffmpeg -i "${INPUT}" -vf drawtext="fontsize=30:fontcolor=white:text='%{pts\:localtime\:${EPOCH}}':x=(w-text_w) - 10:y=10" -crf 28 "${OUTPUT}"
...
```

Get Video File Information

```
ffprobe -loglevel 0 -print_format json -show_format -show_streams <VIDEO_FILE>
```

```
{
  "streams": [
    {
      "index": 0,
      "codec_name": "aac",
      "codec_long_name": "AAC (Advanced Audio Coding)",
      "profile": "LC",
      "codec_type": "audio",
      "codec_time_base": "1/48000",
      "codec_tag_string": "mp4a",
      "codec_tag": "0x6134706d",
      "sample_fmt": "fltp",
      "sample_rate": "48000",
      "channels": 2,
      "channel_layout": "stereo",
      "bits_per_sample": 0,
      "r_frame_rate": "0/0",
      "avg_frame_rate": "0/0",
      "time_base": "1/48000",
      "start_pts": 0,
      "start_time": "0.000000",
      "duration_ts": 35213578,
      "duration": "733.616208",
      "bit_rate": "119736",
      "max_bit_rate": "128000",
      "nb_frames": "34391",
      "disposition": {
        "default": 1,
        "dub": 0,
        "original": 0,
        "comment": 0,
        "lyrics": 0,
        "karaoke": 0,
        "forced": 0,
        "hearing_impaired": 0,
        "visual_impaired": 0,
        "clean_effects": 0,
        "attached_pic": 0,
        "timed_thumbnails": 0
      },
      "tags": {
        "creation_time": "2023-07-16T15:22:49.000000Z",
        "language": "eng",
        "handler_name": "Core Media Audio"
      }
    },
    {
      "index": 1,
      "codec_name": "h264",
      "codec_long_name": "H.264 / AVC / MPEG-4 AVC / MPEG-4 part 10",
      "profile": "High",
```

```

        "codec_type": "video",
        "codec_time_base": "1001/120000",
        "codec_tag_string": "avc1",
        "codec_tag": "0x31637661",
        "width": 1280,
        "height": 720,
        "coded_width": 1280,
        "coded_height": 720,
        "has_b_frames": 0,
        "sample_aspect_ratio": "1:1",
        "display_aspect_ratio": "16:9",
        "pix_fmt": "yuv420p",
        "level": 32,
        "color_range": "tv",
        "color_space": "bt709",
        "color_transfer": "bt709",
        "color_primaries": "bt709",
        "chroma_location": "left",
        "field_order": "progressive",
        "refs": 1,
        "is_avc": "true",
        "nal_length_size": "4",
        "r_frame_rate": "60000/1001",
        "avg_frame_rate": "60000/1001",
        "time_base": "1/60000",
        "start_pts": 0,
        "start_time": "0.000000",
        "duration_ts": 44016973,
        "duration": "733.616217",
        "bit_rate": "8069838",
        "bits_per_raw_sample": "8",
        "nb_frames": "43973",
        "disposition": {
            "default": 1,
            "dub": 0,
            "original": 0,
            "comment": 0,
            "lyrics": 0,
            "karaoke": 0,
            "forced": 0,
            "hearing_impaired": 0,
            "visual_impaired": 0,
            "clean_effects": 0,
            "attached_pic": 0,
            "timed_thumbnails": 0
        },
        "tags": {
            "creation_time": "2023-07-16T15:22:49.000000Z",
            "language": "und",
            "handler_name": "Core Media Video"
        }
    },
    "format": {
        "filename": "Dive2.mp4",
        "nb_streams": 2,
        "nb_programs": 0,
        "format_name": "mov,mp4,m4a,3gp,3g2,mj2",
        "format_long_name": "QuickTime / MOV",
        "start_time": "0.000000",
        "duration": "733.616217",
        "size": "751679577",
        "bit_rate": "8196978",
        "probe_score": 100,
        "tags": {
            "major_brand": "mp42",
            "minor_version": "1",
            "compatible_brands": "isommp41mp42",
            "creation_time": "2023-07-16T15:22:49.000000Z"
        }
    }
}

```

```
}
```

Scripts

Script	Description
correctTime.sh	This script extracts the <code>creation_time</code> , removes the timezone and assigns the local timezone. It then converts this back to UTC and write it back to the video. This fixes issue with GoPro Videos. USAGE: <code>./correct_time.sh video.mp4 --update</code>
timestamp.p.sh	Adds Timestamp in the top right hand corner of the video. USAGE: <code>./timestamp.sh video.mp4</code>
setTime.sh	Sets the time to the local time specified and stores in the video as UTC. USAGE: <code>./setTime.sh video.mp4 '2023-06-13T19:23:59' --update</code>

References

Reference	URL
Add Timestamp to Videos	https://www.bluebill.net/timestamps.html
Merging Chaptered GoPro Videos Whilst Preserving Telemetry Trek View	Merging Chaptered GoPro Videos Whilst Preserving Telemetry Trek View.pdf