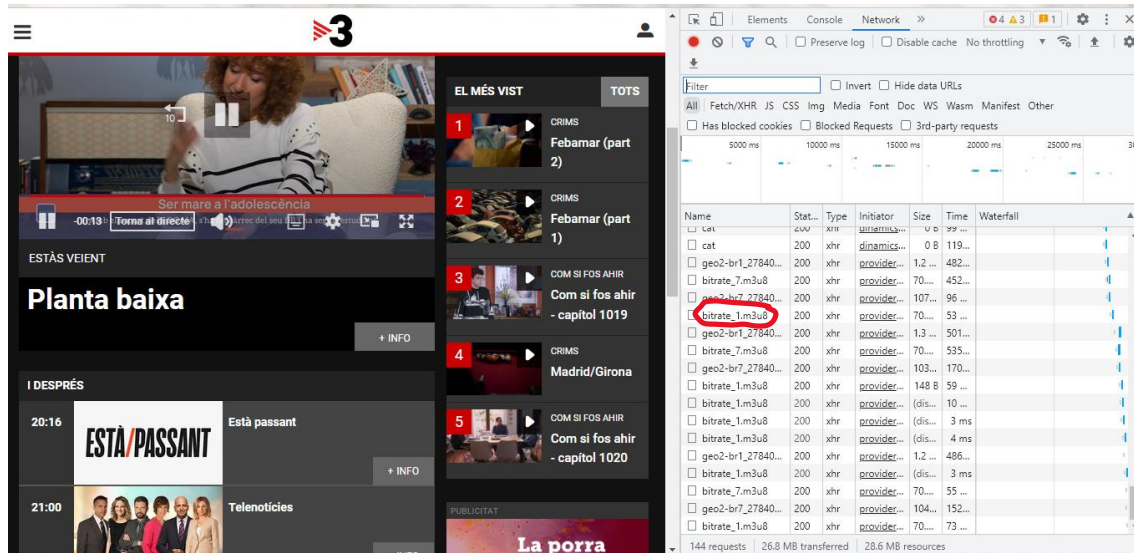


EXERCISE 4

I have analyzed the TV3 livestreaming. For being able to know the protocol that is being used, I have used the developer tools from Chrome. Then, I have selected the Network information and the result was what we can see in the following image:



We can clearly see in the image that this livestreaming is using the HTTP Live Streaming (HLS) protocol since it has files .m3u8 (like the one circled).

Once we know the livestreaming protocol, we can also know which codecs is using by analyzing one .ts file. For doing that, I have download a .ts file and with the command ffprobe of the ffmpeg, I obtained:

```
poldiaz@LAPTOP-JESRHJ4L:/mnt/c/users/poldi/onedrive/escritorio/universitat/quart curs/sistemes de codificació d'àudio i video/video/practica3$ ffprobe segment_tv3.ts
ffprobe version 4.4.2-0ubuntu0.22.04.1 Copyright (c) 2007-2021 the FFmpeg developers
  built with gcc 11 (Ubuntu 11.2.0-19ubuntu1)
  configuration: --prefix=/usr --extra-version=0ubuntu0.22.04.1 --toolchain=hardened --libdir=/usr/lib/x86_64-linux-gnu --incdir=/usr/include/x86_64-linux-gnu --arch=amd64 --enable-gpl --disable-stripping --enable-gnutls --enable-ladspa --enable-libaom --enable-libass --enable-libbluray --enable-libbs2b --enable-libcaca --enable-libcdio --enable-libcodec2 --enable-libdav1d --enable-libflite --enable-libfontconfig --enable-libfreetype --enable-libfribidi --enable-libgme --enable-libgsm --enable-libjack --enable-libmp3lame --enable-libmysofa --enable-libopenjpeg --enable-libopenmpt --enable-libopus --enable-libpulse --enable-librabbitmq --enable-librubberband --enable-libshine --enable-libsnappy --enable-libsoxr --enable-lsbspeex --enable-lsrt --enable-lsssh --enable-libtheora --enable-libtwolame --enable-libvidstab --enable-libvorbis --enable-libvpx --enable-libwebp --enable-libx265 --enable-libxml2 --enable-libxvid --enable-libzimg --enable-libzmq --enable-libzvbi --enable-lv2 --enable-omx --enable-openal --enable-opengl --enable-openssl --enable-pocketsphinx --enable-librsvg --enable-libvfx --enable-libvorbis --enable-libvpx --enable-libx264 --enable-shared
  libavutil 56. 70.100 / 56. 70.100
  libavcodec 58.134.100 / 58.134.100
  libavformat 58. 76.100 / 58. 76.100
  libavdevice 58. 13.100 / 58. 13.100
  libavfilter 7.110.100 / 7.110.100
  libswscale 5.  9.100 / 5.  9.100
  libswresample 3.  9.100 / 3.  9.100
  libpostproc 55.  9.100 / 55.  9.100
Input #0, mpegts, from 'segment_tv3.ts':
  Duration: 00:00:05.82, start: 33307.089600, bitrate: 142 kb/s
  Program 1
    Metadata:
      service_name      : Service01
      service_provider : FFmpeg
  Stream #0:0[0x79](cat): Audio: aac (LC) ([15][0][0][0] / 0x000F), 48000 Hz, stereo, fltp, 127 kb/s
poldiaz@LAPTOP-JESRHJ4L:/mnt/c/users/poldi/onedrive/escritorio/universitat/quart curs/sistemes de codificació d'àudio i video/video/practica3$
```

So, we can also say about this livestreaming that is using the aac codec.