



How to stream camera over network



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1 Overview

This article will explain how to stream camera content over network thanks to GStreamer application on top of V4L2 Linux[®] kernel framework.

Capturing compressed JPEG pictures is an efficient way to send camera images to any local or remote player; JPEG pictures require a limited bandwidth while being fully interoperable.

Find below some examples of command lines allowing to capture a continuous JPEG stream while playing it using various multimedia players, either local or remote.

2 Local streaming

Here is an example of a local preview involving V4l2-ctl for JPEG pictures capture and gst-play GStreamer player for JPEG decoding and display. JPEG pictures are sent over a standard Linux pipe.

```
Board $> v4l2-ctl --set-parm=30;v4l2-ctl --set-fmt-video=width=640,height=480,
pixelformat=JPEG --stream-mmap --stream-count=-1 --stream-to- 2>/dev/null | gst-play-
1.0 "fd://0"
```

--stream-to= tells V4l2-ctl to output binary captured content to standard output, which is then sent to pipe |.

Special URI **fd://0** tells gst-play GStreamer player to read data from the pipe.

Note the **2>/dev/null** right after the V4l2-ctl command to remove the logs from console output.

3 UDP streaming



An internet connection is required, for example by plugging an ethernet cable on the **STM32M P157C-EV1 Evaluation board CN3 ethernet connector**

Get first the IP address **aa.bb.cc.dd** of the host PC using ifconfig command:

```
PC $> ifconfig | grep "inet addr"
inet addr:aa.bb.cc.dd Bcast:10.201.23.255 Mask:255.255.252.0
inet addr:127.0.0.1 Mask:255.0.0.0
```



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Then fill the **host=** udpsink property with this IP address on the remote side:

```
Board $> v4l2-ctl --set-parm=30;v4l2-ctl --set-fmt-video=width=640,height=480,
pixelformat=JPEG --stream-mmap --stream-count=-1 --stream-to=- 2>/dev/null | gst-
launch-1.0 fdsrc ! jpegparse ! rtpjpegpay ! udpsink host=aa.bb.cc.dd port=5000
```

Then play the UDP stream on host PC:

```
PC $> gst-launch-1.0 udpsrc port=5000 ! application/x-rtp, encoding-name=JPEG !
rtpjpegdepay ! jpegparse ! decodebin ! autovideosink
```

A new window will popup on host PC displaying the camera content.



Due to SDP protocol signaling, this solution is not fully interoperable because it needs a dedicated GStreamer command line to be played on host side

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