# UltraGrid

## Sending Spout from Windows to Telematic Server

```
“C:\Program Files\UltraGrid\1.5\uv” -t spout:name=SpoutTX0:fps=25 -c libavcodec:codec=MJPEG telematic.zhdk.ch -P 10300
```

**-t spout:name=SpoutTX0:fps=25** is capturing the spout stream with the name 'SpoutTX0'.

**-c libavcodec:codec=MJPEG** is compressing the stream with MJPEG (an alternativ could be 'h.264')

**telematic.zhdk.ch -P 10300** sets the address and the port to send to.

## Sending Spout from OSX to Telematic Server

```
./uv -t syphon:name=Jitter:app=Max:override_fps=60 -c libavcodec:codec=MJPEG telematic.zhdk.ch -P 10300 -4
```

**-t syphon:name=Jitter:app=Max:override_fps=25** is capturing a specific (server=jitter, app=max) syphon stream.

**-c libavcodec:codec=MJPEG** is compressing the stream with MJPEG (an alternativ could be 'h.264')

**telematic.zhdk.ch -P 10300** sets the address and the port to send to.

**-4** forces ultragrid to use IP4

## Receiving Spout on Windows from Telematic Server

```
“C:\Program Files\UltraGrid\1.5\uv” -d gl:spout=SpoutRX0 -t testcard:10:10:1:uyvy telematic.zhdk.ch -P 10300
```

**-d gl:spout=SpoutRX0** will pass the received texture to a openGL window and send it out as a Spout-Stream with the name 'SpoutRX0'

**- t testcard:10:10:1:uyvy** will send a testcard image of the size 10×10 pixel with 1fps and encoded in the colorspace uyvy to the server. this is not intended for the sender, but to keep the UDP-connection open from the telematic server.

**telematic.zhdk.ch -P 10300** sets the address and the port to listen to.

## Receiving Spout on OSX from Telematic Server

```
./uv –d gl:syphon=SyphonRX0 -t testcard:10:10:1:uyvy telematic.zhdk.ch -P 10300 -4
```

**-d gl:syphon=SyphonRX0** will pass the received texture to a openGL window and send it out as a Syphon-Stream with the name 'SyphonRX0'

**- t testcard:10:10:1:uyvy** will send a testcard image of the size 10×10 pixel with 1fps and encoded in the colorspace uyvy to the server. this is not intended for the sender, but to keep the UDP-connection open from the telematic server.

**telematic.zhdk.ch -P 10300** sets the address and the port to listen to.

**-4** forces ultragrid to use IP4

## Sending SDI Input Video (1080i50) from Decklink with embedded Audio (2 channels) to Telematic Server

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -t decklink:0:Hi50:UYVY:connection=SDI -c libavcodec:codec=MJPEG -f A:mult:3 -f V:rs:200:250 -s embedded –audio-codec OPUS:bitrate=64000 –audio-capture-format channels=2 telematic.zhdk.ch -P 10500:10500:10501:10501
```

**-t decklink:0:Hi50:UYVY:connection=SDI** captures from the first (0) attached decklink device (i.e. BlackMagic UltraStudio Express) and the SDI input with 50 Interlaced in UYUV colorspace

**-c libavcodec:codec=MJPEG** is compressing the stream with MJPEG

**-f A:mult:3** adds audio redundancy

**-f V:rs:200:250** adds video redundancy

**-s embedded –audio-codec OPUS=64000 –audio-capture-format channels=2** captures the sound (stereo 2 channels) from the embedded audio input of the decklink with the audio-code OPUS at a bitrate of 64Kbps

**telematic.zhdk.ch -P 10500:10500:10501:10501** is sending it to the telematic server, set the video RX:TX to ports to 10500 and the audio RX:TX ports to 10501.

# Receiving Video & Audio from Telematic Server and output it on Decklink with embedded Audio

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -d decklink:0:Use1080pNotPsF=false -r embedded -t testcard:10:10:1:uyvy -s testcard –audio-codec OPUS:bitrate=1024 telematic.zhdk.ch -P 10505:10505:10506:10506
```

**-d decklink:0:Use1080pNotPsF=false** passes the received video stream to the decklink device (i.e. Blackmagic Ultrastudio Express) and output 25p as 25PsF (Progressive Segmented Frames)

**-r embedded** includes the received audio stream in the video signal on decklink

**- t testcard:10:10:1:uyvy** will send a testcard image of the size 10×10 pixel with 1fps and encoded in the colorspace uyvy to the server. this is not intended for the sender, but to keep the UDP-connection open from the telematic server.

**-s testcard –audio-codec OPUS:bitrate=1024** will send a testtone the server at a very low bitrate (1024bps). this is not intended for the sender, but to keep the UDP-connection open from the telematic server.

**telematic.zhdk.ch -P 10505:10505:10506:10506** is receiving from the telematic server, the video RX:TX to port 10505 (notice: this is a UDP multi proxy stream, the receiver listens to a different port than the sender is sending), the audio RX:TX to port 10506.

# Twinlab Streams

### Capture ZRH-PGM (Video & Audio) from Blackmagic Interface 0 and send it to telematic.zhdk.ch

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -t decklink:0:Hi50:UYVY:connection=SDI -c libavcodec:codec=MJPEG -f A:mult:3 -f V:rs:200:250 -s embedded –audio-codec OPUS:bitrate=64000 –audio-capture-format channels=2 telematic.zhdk.ch -P 11500:11500:11501:11501
```

### Capture ZRH-OV from Blackmagic Interface 1 and send it to telematic.zhdk.ch

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -t decklink:1:Hi50:UYVY:connection=HDMI -c libavcodec:codec=MJPEG -f V:rs:200:250 telematic.zhdk.ch -P 11510
```

### Receive ZRH-PGM (Video & Audio) and output it on Blackmagic Interface 0

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -d decklink:0:Use1080pNotPsF=false -r embedded -t testcard:10:10:1:uyvy -s testcard –audio-codec OPUS:bitrate=1024 telematic.zhdk.ch -P 11505:11505:11506:11506
```

### Receive ZRH-VIZ and output it on Blackmagic Interface 1

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -d decklink:1:Use1080pNotPsF=false -t testcard:10:10:1:uyvy telematic.zhdk.ch -P 11525
```

### Receive HK-PGM (Video & Audio) and output it on Blackmagic Interface 2

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -d decklink:2:Use1080pNotPsF=false -r embedded -t testcard:10:10:1:uyvy -s testcard –audio-codec OPUS:bitrate=1024 telematic.zhdk.ch -P 11535:11535:11536:11536
```

### Receive HK-VIZ and output it on Blackmagic Interface 3

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -d decklink:3:Use1080pNotPsF=false -t testcard:10:10:1:uyvy telematic.zhdk.ch -P 11555
```

### Preview ZRH-PGM (Video & Audio) on Display

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -d gl -r coreaudio -t testcard:10:10:1:uyvy -s testcard –audio-codec OPUS:bitrate=1024 telematic.zhdk.ch -P 11505:11505:11506:11506
```

### Preview ZRH-OV on Display

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -d gl -t testcard:10:10:1:uyvy telematic.zhdk.ch -P 11515
```

### Preview ZRH-VIZ on Display

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -d gl -t testcard:10:10:1:uyvy telematic.zhdk.ch -P 11525
```

### Preview HK-PGM (Video & Audio) on Display

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -d gl -r coreaudio -t testcard:10:10:1:uyvy -s testcard –audio-codec OPUS:bitrate=1024 telematic.zhdk.ch -P 11535:11535:11536:11536
```

### Preview HK-OV on Display

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -d gl -t testcard:10:10:1:uyvy telematic.zhdk.ch -P 11545
```

### Preview HK-VIZ on Display

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -d gl -t testcard:10:10:1:uyvy telematic.zhdk.ch -P 11555
```

### Generate Testsignal for ZRH-PGM (Video & Audio) and send it to telematic.zhdk.ch

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -t testcard:1920:1080:50i:UYVY -c libavcodec:codec=MJPEG -f A:mult:3 -f V:rs:200:250 -s testcard –audio-codec OPUS:bitrate=64000 –audio-capture-format channels=2 telematic.zhdk.ch -P 11500:11500:11501:11501
```

### Generate Testsignal for ZRH-OV and send it to telematic.zhdk.ch

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -t testcard:1920:1080:50i:UYVY -c libavcodec:codec=MJPEG -f V:rs:200:250 telematic.zhdk.ch -P 11510
```

### Generate Testsignal for ZRH-VIZ and send it to telematic.zhdk.ch

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -t testcard:1920:1080:25p:UYVY -c
libavcodec:codec=MJPEG -f V:rs:200:250 telematic.zhdk.ch -P 11520
```

### Generate Testsignal for HK-PGM (Video & Audio) and send it to telematic.zhdk.ch

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -t testcard:1920:1080:25p:UYVY -c
libavcodec:codec=MJPEG -f A:mult:3 -f V:rs:200:250 -s testcard –audio-codec
OPUS:bitrate=64000 –audio-capture-format channels=2 telematic.zhdk.ch -P
11530:11530:11531:11531
```

### Generate Testsignal for HK-OV and send it to telematic.zhdk.ch

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -t testcard:1920:1080:25p:UYVY -c
libavcodec:codec=MJPEG -f V:rs:200:250 telematic.zhdk.ch -P 11540
```

### Generate Testsignal for HK-VIZ and send it to telematic.zhdk.ch

```
/Applications/UltraGrid\ GUI.app/Contents/MacOS/uv -t testcard:1920:1080:25p:UYVY -c
libavcodec:codec=MJPEG -f V:rs:200:250 telematic.zhdk.ch -P 11550
```

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