

How to Integrate LiveU with Any **Software** or **Hardware** Switcher

LiveU's bonded cellular portable live transmission units enable video transmission from virtually anywhere. Multitudes of live video creators worldwide have turned to LiveU to ensure their feeds stay live and at the best possible quality available.



Whether adding completely untethered wireless camera sources or providing redundant connectivity for fail-proof program feed output, it's possible to leverage LiveU encoders in practically any type of live video production workflow.

LiveU can be used for input or output with software switchers like Wirecast, vMix, OBS, xSplit, StretchCast, Grabyo, ProductionTruck and more. It can also feed in or out of hardware switchers like Wirecast Gear, Blackmagic ATEM, NewTek Tricaster, Roland, Ross, Grass Valley and others.

LiveU Workflows

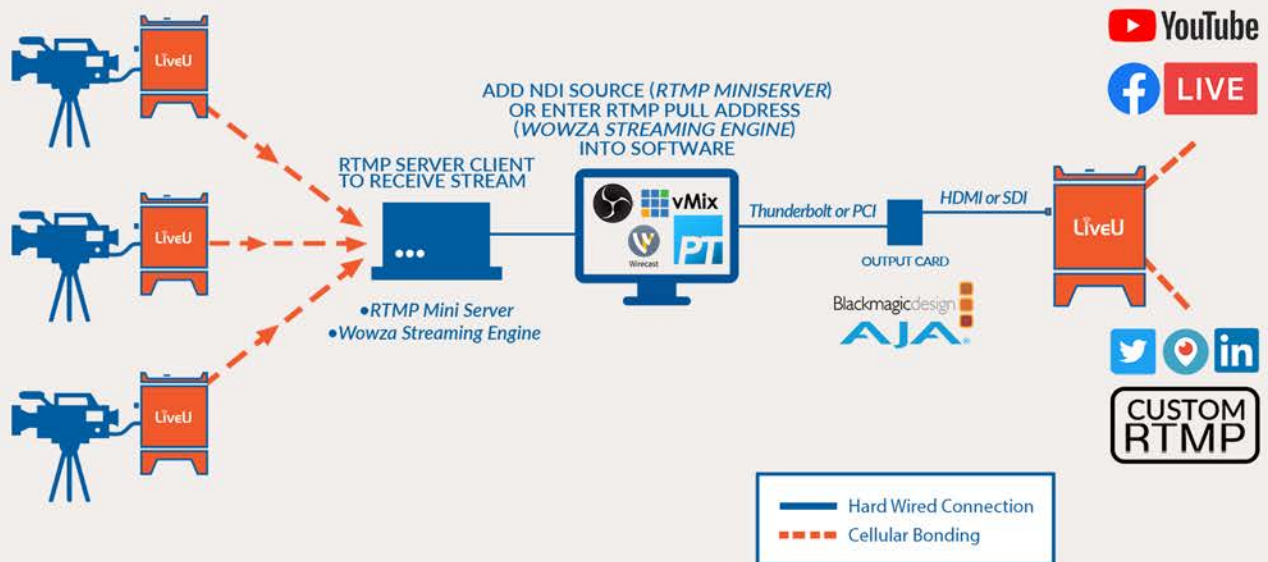
The purpose of this document is to outline three common LiveU workflows and share details on how they can be achieved:

- ▶ Wireless Remote Production with LiveU Solo
- ▶ Wired Remote Production with LiveU Solo
- ▶ Remote Production with LiveU HEVC Portable Transmission Units

Wireless Remote Production with LiveU Solo

For users of software switchers, the dilemma of adding reliable remote camera sources can be quite the challenge. It may seem an impossible or cost-prohibitive task. But not with LiveU Solo.

In the diagram, 3 LiveU Solos located anywhere in the world are sending video back to a RTMP server client running on a computer that is connected to the same network as the switching software. The RTMP server client software can even be run on the same computer as the switcher software, but it may be advisable to use a separate machine to conserve CPU and RAM resources. RTMP MiniServer or Wowza Streaming Engine are two RTMP server client softwares that can be installed on a computer to enable it to receive RTMP streams.



RTMP MiniServer provides RTMP URLs that are entered into LiveU Solo's web portal to send feeds to it. Then, it converts the received feeds into NDI (Network Device Interface) sources that automatically appear in any software that supports NDI. This protocol enables simple sharing of video sources across a network.

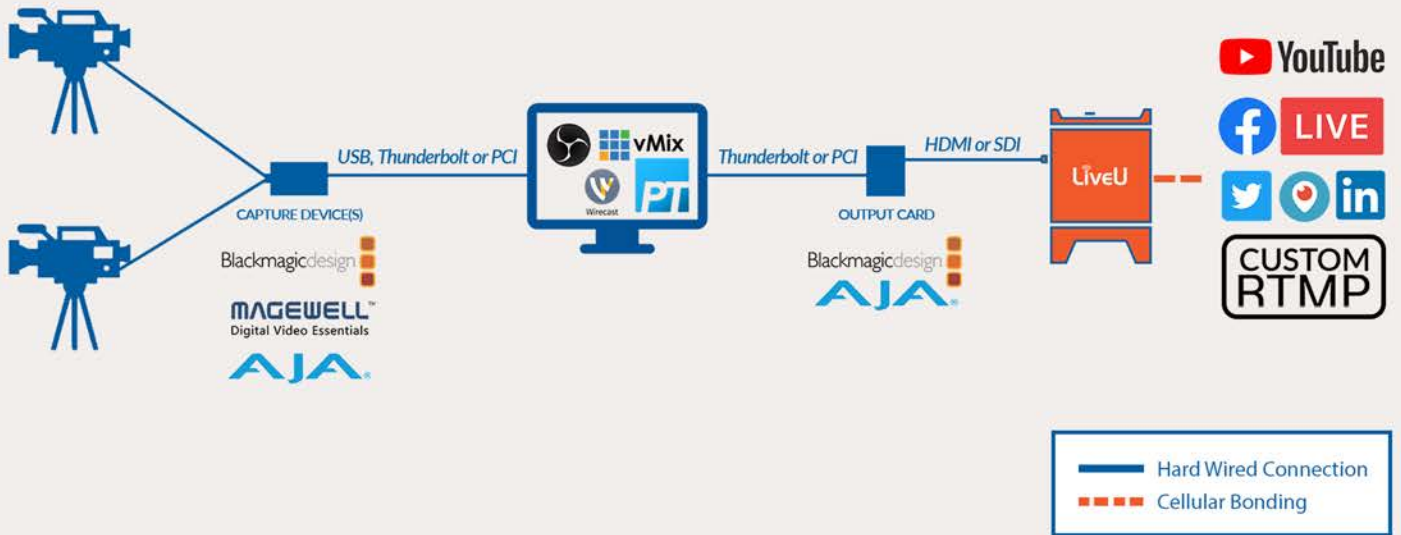
Wowza Streaming Engine provides a RTMP push URL to enter as a custom RTMP destination in LiveU Solo's web portal to send video to it, and also a RTMP pull URL that can be entered into any software that allows you to play out a web stream as an input source.

Once the feeds are received in the software switcher, they can be mixed like any other camera sources. There may be some degree of latency (delay) on the video from the LiveU Solos, but that can be mitigated by turning on "Low Delay Mode," which will set the latency at 1 second. The purpose of this delay is to allow for error correction to recover data packets and prevent against poor quality video. The delay will be 5 seconds if "Low Delay Mode" is turned off.



Wired Remote Production with LiveU Solo

Depending on a singular Internet connection and software encoding of a mixed program feed can be a dicey proposition. Any hiccup in network speed or spike in CPU usage can devastate even the most well-produced live stream. Fortunately, LiveU Solo can bond multiple sources of bandwidth to provide crucial network failover and offload encoding processes to dedicated hardware to ensure reliable and high-quality output.



In the diagram, see the workflow components to the right of the computer. Most switcher softwares offer compatibility with dedicated output cards for true high-resolution video out via SDI or HDMI. Blackmagic and AJA external or internal output cards which connect to computer with Thunderbolt or PCI are recommended. Output via direct HDMI connection from computer into LiveU Solo is not advised, as this type of monitor output may not be reliable nor offer full resolution.

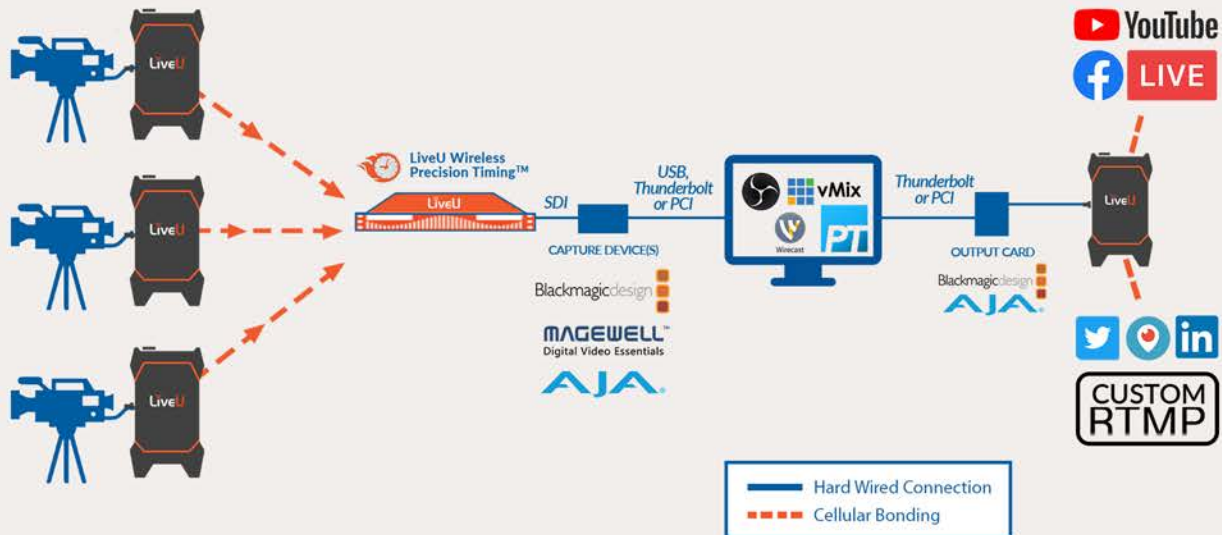


SDI or HDMI cables can be connected from a Blackmagic or AJA output card into LiveU Solo, at which point you should see your mixed program feed on Solo's screen, and you can configure Solo to output the stream to any RTMP destination of your choice, including Facebook, YouTube, Twitter/Periscope or LinkedIn.

Please note that streaming to multiple destinations simultaneously would require a service such as Restream.io or Switchboard Live.

Remote Production with LiveU HEVC Portable Transmission Units

LiveU's broadcast line of portable transmission units (LU300, LU600) provide further redundancy through additional cellular modems, along with additional features such as tally light, two-way intercom, and graphics overlays. LiveU transmission units can be rented, leased, or bought directly from LiveU, and in most cases, they include a physical server with 1-4 SDI outputs.



In the diagram, 3 remote LU300 transmission units (which offer 4 cell modems + Wi-Fi + Ethernet) are feeding video back to an LU2000 quad output server located anywhere in the world. Output to the server is a simple process of looking at the encoder's screen and selecting a preconfigured output channel that corresponds with a specific SDI output port on the server.

SDI output from the LU2000 is then brought into the switcher either directly into a hardware switcher's SDI port, or into a software switcher through a USB, Thunderbolt or PCI capture card. Blackmagic, Magewell or AJA products are recommended tried-and-true capture devices for software switchers.

Once in the software or hardware switcher, the feeds can be mixed as desired, and kept in sync via LiveU's precision timing mechanism. As long as the latency is set to the same amount of time delay on all units, they will be in sync. Latency and other settings can be controlled remotely via the LiveU Central web management console.



Output of a switcher's mixed program feed could go via SDI or HDMI to a LiveU transmission unit. For software switchers, AJA or Blackmagic playback cards (Thunderbolt and PCI) can be used for SDI and HDMI output. RTMP or MPEG-TS output destinations can be configured via LiveU Central.

How LiveU Portable Live Video Transmission Works

LiveU portable transmission units high-quality video encoding and transport all utilize our patented cellular bonding and LiveU Reliable Transport (LRT) so you can transmit live video from anywhere.

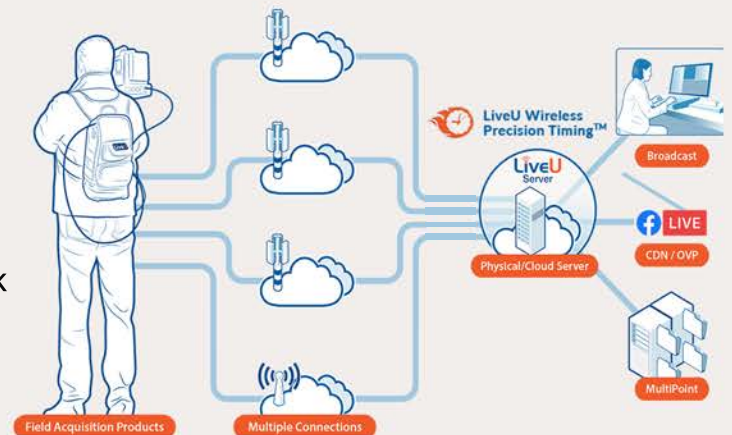
You never want to rely on just one connection. Congestion, network fluctuations, or not ENOUGH bandwidth can all spell disaster for your live video. LiveU ensures network stability by bonding together multiple networks of varying bandwidths to create one single, reliable connection to transmit your live video content.

LRT then utilizes multiple video encoding technology to ensure the highest quality video is transmitted even while mobile. As bandwidth fluctuates, LRT informs the LiveU encoder to dynamically adapt the bit rate to maintain a robust transmission.



LiveU Wireless At-Home Production

LiveU delivers completely wireless at-home or REMI production solutions. This solution means you can have multiple cameras and encoders on-location all transmitting automatically synced feeds to a remote studio with LiveU Precision Timing™. This at-home production workflow allows all feeds from the field to be received back in the studio for mixing, so the switcher or any other production equipment doesn't have to be brought on location - saving time, money and resources.



For more information contact your LiveU sales representative
or request info at get.liveu.tv