Considering the Use of Live Streaming
in Worship in the Presbytery of Arkansas
Prepared by Mark Clark – Last Revision July 7th, 2020

As churches in the presbytery continue to weigh their options concerning how to present their worship via the internet, particularly in the midst of the continuing pandemic, the issue of live streaming has entered into conversations. To help churches learn more about live streaming, I have provided some information below that might be of interest.

1) **What is Live Streaming Exactly?**

Live streaming refers to the process of recording the audio and video of an event in real-time and sending the data through an encoder that converts it into packets of information that can be sent over the internet, which can then be seen in real-time on any web browser anywhere in the world. This is different from prerecording audio and video and then broadcasting it via the internet at a specified time, such as is offered by the You Tube Premiere service. Rather, live streaming is a live real-time event, which offers the possibility of real-time interactivity between worship leaders and those viewing at home.

2) **What are the Advantages of Live Streaming?**

The major challenge of every church during the pandemic is how pastors and congregants are to stay connected with one another in continuing fellowship, so essential to the long-term survival of the community of faith. Live streaming offers an excellent way of maintaining or reviving member interest in worship by offering a participatory interactive alternative to prerecording.

With live streaming, those at home would be able, through a live chatline, to send announcements and prayer requests in real time to worship leaders. In turn, pastors would be able to greet those at home by name, share announcements, and even offer live prayers in response to at-home requests. And after reopening, home viewers would be able to see those attending in person in real-time and even receive live greetings from their brothers and sisters. Visual imagery, including slides, videos and other displays such as hymn lyrics, calls to worship and confession, etc. can be easily displayed. Also, when live streaming is paired with an on-line giving service, those at home may even participate in the offering. Finally, for those unable to view the worship service at its regular time, the worship service can be automatically archived for later viewing.

3) Are There Copyright Issues When Live Streaming Music?

Prerecording or live streaming over the internet music performed during a worship service does little to change a church's responsibilities under the copyright laws. It simply makes what it does more public. While presumably the "Religious Services Exemption" of the copyright laws allows the performance of copyrighted material during worship services even without securing the rights, the better course of action is to purchase an annual license from CCLI (Christian Copyright Licensing International), which provides the rights to perform thousands pieces of copyright protected religious music. They have recently added a license for live streaming as well. The base cost for churches with 100-199 members is $235 per year, and an additional live streaming license is $73, with a sliding scale upward and downward depending upon membership size.

However, while purchasing a CCLI license is the responsible thing to do, it does not resolve issues that may arise either when streaming or uploading pre-recoded video to You Tube or Facebook. You Tube employs a digital fingerprinting system called "Content ID," where videos uploaded to YouTube are digitally compared to audio and video files registered by copyright owners, looking for any matches. If it finds a match, it notifies the copyright owner, who can mute the audio, block the video, track the users, and/or display advertisements for their own performance of the music in question. Facebook has a similar fingerprinting system in place but, at least by internet rumor, is less vigorous than You Tube in enforcement.

As the whole process is computer generated, You Tube and/or Facebook would have no knowledge whether or not a CCLI license had been purchased and the performance properly licensed. And so, while a church may have a perfectly secured copyright license to a particular piece of music, it may still get flagged.

So, what are the options? Of course, any church is free to privately secure the rights directly from the copyright owner who, in turn, would notify You Tube and/or Facebook. However, easier options are either to only perform hymns that are in the public domain when using You Tube or Facebook, or to limit posting prerecorded or live streamed worship services to the church's own web site where there is little public scrutiny. The church could still tap into the popularity of Facebook without posting the worship video itself on the church's Facebook page, but rather posting a link to the video to be found on the church's web site.

There are two aids in learning which hymns are in the public domain and therefore free of copyright protection. First, there is a published list of hymns in the Presbyterian hymnal "Glory to God" which are in the public domain:

https://www.wjkbooks.com/Content/Site117/Basics/1342PublicDomai_000000164
27.pdf   Second, CCLI's "Song Select" web page provides a free comprehensive
list of religious music in the public domain:
https://songselect.ccli.com/search/results?List=publicdomain

  4) **What Sort of Equipment is Needed to Live Stream?**
        There are a number of options for equipment use, with the usual caveat that
the more money spent, the higher the quality. In addition to the equipment listed
below, the church would have to provide a fast internet connection, preferably
wired, to the sanctuary.

        Beginner's Equipment - The least expensive way to live stream
requires only a smartphone and a Facebook account, the latter of which is free.
One only has to push the icon on the profile page of the account holder that reads
"live video" and the smartphone is turned into an audio/video recorder, posting live
audio and video onto the holder's profile page, which can then be shared with the
Facebook world at large. An inexpensive ($25) tripod for stability and a wired
lapel mic, with lightning adapter plugged into an iPhone ($27) to remove the echo
effect from the phone's built-in microphone, gives one a low-cost means of live
recording. If a laptop computer is available, attaching a web cam ($80) and wired
lapel mic ($27) gives one free access to both the Facebook and You Tube Live
steaming services.

        Professional Equipment – Using higher end equipment is best when
considering a permanent installation. This would involve the use of high definition
PTZ cameras (pan, tilt and zoom) with optical zoom, mounted on various walls of
the sanctuary, and cabled to a control area containing the various equipment
needed: an audio mixer, a video mixer, a video encoder, remote controller for
cameras, various preview monitors, a computer, and various other equipment,
cables and adapters. While the cost would be variable depending on the quality of
the equipment chosen, the cost would be in the thousands of dollars. The best way
to approach this type of installation would be to contact several audio/video
installation contractors and secure bids. The contractor chosen would then
purchase and install the equipment, provide initial training, and repair or replace
equipment under warranty.

        Recommended Equipment – For churches just starting out in the
world of live streaming for whom cost is a concern but who, nevertheless, want to
have the full experience of high definition video with multiple cameras and good
quality audio using multiple microphones, I suggest the configuration depicted in
the diagram below. It allows for the use of three cameras, which is much preferred
to a single camera, as three allow for the easy transition from one speaker or area

of the sanctuary to another, for various degrees of closeness to the subjects, and in general for a much more varied and interesting visual experience than is possible from a single fixed view.

The below configuration also allows for multiple audio feeds, so a liturgist, pastor and musician can all have separate microphones. Alternatively, this system can tap into the church's own sound system. Finally, the free OBS encoding software recommended allows the use of PowerPoint or other presentation software to display slides, videos, or any other visual imagery during the live stream. This could include the display of liturgy, prayers of confession, song lyrics, opening countdowns, etc.

The full equipment list with current costs is immediately below. The configuration suggested includes the use of three inexpensive HD (High Definition) webcams. Replacing one or more HD webcams with a 4K higher resolution webcam would allow for closer zooming without reduction in picture quality and would cost about $150 more per camera. The list assumes use of wireless microphones. If using the sanctuary's sound system for audio, the audio equipment would change but the cost would be approximately the same. In addition, if it is desired to live stream independent of either Facebook or You

Tube, live stream hosting services are available at a cost of $25 per month and up, depending on the options desired. Finally, the list includes a computer laptop which would be available for other uses throughout the week.

Cameras

Logitech C920 HD Pro Webcam $80. X 3 $240.

Camera Tripods

InnerTeck Tripod -70 Inches
Professional Camera Tripod $44. X 3 $132.

Wireless Microphones

Movo Photo WMX-20-DUO 2-Person
Camera-Mount Wireless Lavalier Microphone
System (UHF) $200.

Movo WMX-7 VHF 12-Channel
Wireless Lavalier Microphone System
with 1 Receiver, 1 Transmitter, and 1
Lapel Microphone $80.

Laptop Computer

HP Pavilion 15.6" FHD IPS Micro-Edge Touchscreen WLED Backlit Laptop, Intel Quad-Core i7-1065G7 up to 3.9GHz, 12GB DDR4, 1TB HDD $845.

Logitech M535 Bluetooth Mouse Compact Wireless Mouse $30.

Connectors & Adapters

USB 3.0 To Ethernet Adapter $15.

3.5mm Audio Switcher, 2 Input 1 Output/ 1 Input 2 Output Audio Splitter Switch $14.

Sabrent 4-Port USB 3.0 Hub $10.

Cabling

USB 3.0 Extension Cable 20 ft $14. X 3 $42.

Cat 6 Ethernet Cable, 30 Feet $11.

TRS to TRSS 3.5m Audio Cable $10.

3.5 mm Male to Male Stereo
Audio Cable, 4 Feet $6.

Miscellaneous

Corded Stereo Headset $15.

Subtotal	$1,650.
9% Sales Tax	$148.
Total	**$1,798.**

5) Summary

I have some experience in purchasing, installing and using audio and video equipment for churches and am offering help to churches looking to improve the equipment they have on hand for prerecorded worship and/or to begin live streaming. I would be glad to visit with any pastor or church leader about worship technology without charge and to arrange an on-site visit to demonstrate how various equipment might work in their place of worship. I can be contacted by phone or text at 501-563-6239 or via e-mail at mclark05@earthlink.net.