Live Streaming for Beginners Webinar Handout

Webinar Video:
https://vimeo.com/478241456

Equipment and Services Needed:

1. **Internet**
   a. You will need a dedicated internet line that does not have any other users or devices using the same internet connection.
   b. Hardwire your internet to your encoding device.
   WIFI is well known for having inconsistent speeds, sometimes dropping a lot in terms of overall performance. This can cause "sputters" in a live stream, especially if it's set at higher bitrates. Using wireless internet for streaming also increases the likelihood of stream failure, whether it be from signal interference or even environmental factors.
   c. Test Your Internet Speed several times during the day and especially the day of the week you will be live streaming most often on
      i. Speedtest.net
      ii. Speedof.me
      iii. Testmy.net
   d. Your Internet upload speed is most often lower than your download speed. For live streaming it is important to have consistent upload speeds that match your Stream quality. You should aim to have 1.5 times available upload speed for the minimum for your video quality:

Video Quality	Absolute Minimum Upload Speed	Recommend X 1.5 Upload Speed
720p (SD)	3.0 Mb/s	4.5 Mb/s
1080p (HD)	5.0 Mb/s	7.5 Mb/s
1440p (4K UHD)	25 Mb/s	37.5 Mb/s

2. **Cameras**
    a. Cell Phone - Your cell phone is likely to have a great camera and it is the Cheapest option!
        i. Plug Phone in and don't rely on its battery
        ii. Look into stabilizing that cell phone
            1. Movo iVlogger Cell phone Rig $80
    b. Canon VIXIA HF R800 $250
    c. Sony Alpha a6400 Mirrorless Digital Camera $1300
    d. Blackmagic Design Pocket Cinema Camera 4K $1,300

3. **Audio**
    a. Cell Phone - Upgrade the Audio (poor)
        i. Rode Wireless Go or ALTSON AWM-TR connected to Soundboard (good)
    b. Camera Microphone (poor)
    c. Church Soundboard (Good)

4. **Video Capture**
    a. BlueAVS Video Capture - Webcam
        i. Your video feed will be seen by your computer as a "Webcam"
    b. Elgato Cam Link 4K
        i. Your video feed will be seen by your computer as a "Webcam"
    c. Blackmagic Design DeckLink Mini
    d. Blackmagic Design DeckLink Quad

    ● **NOTE:**
    An HDMI video from a given device will always be delayed 3-12 frames from a different audio source unless the given device also sends the audio in the same HDMI feed. The Rode Wireless Go is a great option to add the other audio source into the given device. This will sync the audio and video together in the HDMI out of the given device. Here we are assuming the camera has an audio in port.

5. **Switcher (Optional - only for multiple video sources)**
    a. Blackmagic Design ATEM Mini $300
       - OR -
       Blackmagic Design ATEM Mini Pro $600
        i. Multiple Cameras
        ii. Screen Capture / Worship Software / PowerPoint
        iii. Other Video Sources (like a DVD player)
        iv. Screen Graphics from a computer (Logo, lower thirds, transitions)

6. **Computer**
    a. Windows
        i. Intel i7 or i9 processor AMD Ryzen 7 or 9 processor
        ii. 16 GB of RAM
        iii. Windows 10 (updated)
        iv. Dedicated (meaning, not integrated) GPU with 4GB of VRAM

    b. iMac or MacBook Pro
        i. i7 or i9 processor
        ii. 16 GB of RAM
        iii. Mojave OS 10.14.6
        iv. dedicated (meaning, not integrated) GPU with 4GB of VRAM
    Note: Avoid the new M1 chip as it is not as powerful

Also consider adding 512 M.2 SSD for faster Operating System and Application functionality as well as a 1 or 2 TB mechanical hard drive for general storage.

7. **Encoder (Package and Compress audio and video together)**
    a. Software - add to your computer
        i. OBS - Open Broadcaster Software $0
        ii. StreamLabs OBS $0
        iii. vMix $0 - $60 (Free - Basic HD)
        iv. ProPresenter - $400
        ● Requires a computer to run
        ● Performance depends on the computer
        ● Ability to tweak the settings

    b. Hardware - Computer Built I
        i. Cell Phone
        ii. Blackmagic Design ATEM Mini **Pro** $600
        iii. Resi RAY E1210 $1,300
        iv. TriCaster $4500
        v. TeraDek $1790
        ● Stand-alone unit
        ● High performance
        ● Set and forget
    c. Web Based Encoders
        i. Melon $0 or $15/month (limited time offer)
            1. Webcam only (see Video Capture sections "a" & "b")
            2. Multi Stream Capable
                a. Simultaneously stream to Facebook, YouTube, Twitch, and/or a custom RTMP stream
                b. Similar to ReStream.io

8. **CDN - Content Delivery Network**
    a. Facebook
        i. Hyper Copyright Infringement Awareness
    b. YouTube
        i. Hyper Copyright Infringement Awareness
    c. Zoom - Webinar Consider also streaming to YouTube and/or Facebook from Zoom
    d. Twitch ([link](#)) (Video Game Streaming Platform)
    e. Vimeo Live Streaming ([link](#)) - Pricey
    f. Adventist Church Connect Streaming ([link](#)) - $25/month
    g. Restream ([link](#)) - $19/month
    h. TruthCasting ([link](#)) $25 or more/month (priced by church size)
    i. Streamingchurch.tv ([link](#)) - $79/month

Linked Resources:

The products and services in this document are suggestions based on what has worked for others but is not a list of the only services and equipment. This is meant as simply a good source for you to begin your own research.

Cameras:	
Any Camera will work as long as it can connect to a computer and be seen as a video source.	
	Canon VIXIA HF R800 - $250: https://www.amazon.com/gp/product/B01N7OAH3I/ref=ox_sc_act_title_1?smid=ATVPDKIKX0DER&psc=1
	Panasonic 4K HC-WXF991K - $1000 https://www.amazon.com/gp/product/B01A60T3R4/ref=ox_sc_act_title_1?smid=ATVPDKIKX0DER&psc=1
	Sony Alpha a6400 Mirrorless Digital Camera with 18-135mm Lens - $1,300: https://www.bhphotovideo.com/c/product/1453771-REG/sony_ilce_6400m_b_alpha_a6400_mirrorless_digital.html
	Canon EOS Rebel T7i DSLR - $800 - $1000 https://www.amazon.com/gp/product/B08KHX4RLD/ref=ox_sc_act_title_1?smid=A3KTZ4MX8F6OME&psc=1
	Blackmagic Design Pocket Cinema Camera 4K Kit with 12-35mm Zoom - $2,900 https://www.bhphotovideo.com/c/product/1583796-REG/blackmagic_design_back_to_school_video.html

Internet Speed:
Upload speed is the most important number for streaming out

	Speedtest by Ookla - The Global Broadband Speed Test Speedtest.net
	SpeedOf.Me - Internet speed test for all devices Speedof.me
	TestMy.net - Internet Speed Test Testmy.net

Audio:
Audio is absolutely the most important element of your live stream.

	Rode Wireless Go - $200: https://www.bhphotovideo.com/c/product/1471382-REG/rode_wireless_go_compact_wireless.html?sts=pi&pim=Y
	ALTSON AWM-TR Wireless Transmitter & Receiver - $90 https://www.amazon.com/gp/product/B08BZD9HMW/ref=ox_sc_act_title_1?smid=A3AO9QDNU8GKEI&psc=1

Video Capture:
Capture the video signal into your computer.

	BlueAVS Video Capture - $20: https://www.amazon.com/gp/product/B0876VWFH7/ref=ox_sc_act_title_1?smid=A27TECADBU6WV0&psc=1
	Elgato Cam Link 4K - $120: https://www.bhphotovideo.com/c/product/1453840-REG/elgato_systems_10gam9901_cam_link_4k_game.html
	Blackmagic Intensity Pro HDMI and Analog Editing Card - $100 https://www.bhphotovideo.com/c/product/495426-REG/Blackmagic_Design_BINTSPRO_Intensity_Pro_HDMI_and.html
	Blackmagic Design DeckLink Mini Recorder 4K - $200 https://www.bhphotovideo.com/c/product/1281032-REG/blackmagic_design_bdlkminirec4k_decklink_mini_recorder_4k.html
	Blackmagic DeckLink Quad HDMI Recorder Capture Card - $550 https://www.bhphotovideo.com/c/product/1464918-REG/blackmagic_design_bdlkdvqdhdmi4k_decklink_quad_hdmi_recorder.html

Switchers (Optional): **A switcher allows you to change from one video source to another with ease.**	
	Blackmagic Design ATEM Mini - $300 https://www.bhphotovideo.com/c/product/1507214-REG/blackmagic_design_swatemmini_atem_mini_switcher_control.html
	Blackmagic Design ATEM Mini Pro - $600: https://www.bhphotovideo.com/c/product/1557461-REG/blackmagic_design_atem_mini_pro_hdmi.html?sts=pi&pim=Y

Software Encoders:

	OBS Open Broadcaster Software - $0 https://obsproject.com/ This is the original and master OBS Software but it is not as easy to use as Streamlabs OBS.
	Streamlabs OBS - $0 https://streamlabs.com/streamlabs-obs Built on top of OBS this adds features and set up wizards that make this use less computer resources while also making it easier for new users to get up and running quickly.
	vMix Live Production & Streaming Software - $60 (Basic HD) & Up https://www.vmix.com/
	ProPresenter - $400 https://renewedvision.com/propresenter/ **Worship software & Encoder in one**

Hardware Encoders:

	Blackmagic Design ATEM Mini Pro - $600: https://www.bhphotovideo.com/c/product/1557461-REG/blackmagic_design_atem_mini_pro_hdmi.html?sts=pi&pim=Y Yep!, The Pro version encodes too.
	EzeCaster Pro - $1250: https://www.streamingvideoprovider.co.uk/live-video-encoder-rtmp-ezecaster.html

Web/Browser Based Encoder

	Melon (by Streamlabs) $0 or $15/month https://melonapp.com/

Other Equipment:
Here are some helpful items to improve your livestream

	Movo iVlogger Cell Phone Video Rig Kit - $80 https://www.amazon.com/gp/product/B087YR738S/ref=ox_sc_act_title_3?smid=AJJXN514E694T&psc=1
	Magnus VT-4000 Tripod - $159.95 https://www.bhphotovideo.com/c/product/842086-REG/Magnus_VT_4000_VT_4000_Tripod_System.html

CDN - Content Delivery Networks:

This is the service that you Livestream to. They (hopefully) have a network of servers around the world to repeat your stream locally to the connecting viewer.

Facebook - https://www.facebook.com/live/create
YouTube - https://youtube.com
Zoom - https://zoom.us
Twitch - https://www.twitch.tv
Vimeo's Livestream - https://livestream.com
Adventist Church Connect - https://adventistchurchconnect.com
Streamingchurch.tv - https://streamingchurch.tv
TruthCasting - https://truthcasting.com

Knowledge Resources:

Church Streaming Liability - Copyrights, Licensing, & Privacy:
https://adventistrisk.org/en-us/safety-resources/solutions-newsletter/2020/april/church-streaming-liability

How Facebook Handles Copyright Infringements
https://www.facebook.com/help/www/308895412492789

How YouTube Handles Copyright Infringements
https://www.youtube.com/howyoutubeworks/policies/community-guidelines/#enforcing-policies

How to Add Your Live Stream to Your Website

Depending on what service you choose to go with most of them should provide you with a snippet of code that you can add to your website. While when you livestream your viewers will be able to watch your live stream on that services website you can also add that code to your website.

1. Start by copying the HTML code from your streaming service.
2. logging into your website.
3. Create or go to the page you want to add the live stream.
4. Click the "Edit" at the top of the page.
5. Click inside the editable region (blue bordered area) where you want to add the live stream.
6. Just to the left of where the cursor is blinking you will see the black "Add Block" square with a white plus (+) in it. Click this button.
7. A box will appear with a list of blocks you can add. Select the "HTML" option.
8. A new larger box will show up on your screen. Click inside this empty box and then paste your copied code into it.
9. Look through your code carefully for any "http://" and change it to "https://".
10. Click the save button at the bottom
11. Finally, publish the page.

Test your live stream to make sure everything is working as it should.

Adventist Church Connect Live Streaming Service:

While there are many options for Live streaming we also offer live streaming. Most churches using our service find that the Entry level is more than sufficient for their needs. We suggest using OBS or Streamlabs OBS encoding Software as it is good and inexpensive (as in free).

There is a one-time setup fee of **$85** to configure the server and create the account for your new stream.

Our Media Streaming Packages:
Media streaming packages include the option for both live and archived streaming.

1. Entry level media streaming package Cost: $24.95/month
   Includes: live streaming server and archived media server
   Includes: 20 gigs file storage (archived media)
   Includes: 80 gigs of bandwidth
   Suggested stream quality: up to 400 Kbps
   Suggested audience: 100 concurrent viewers, 400 viewer hrs/mo

2. Mid level media streaming package Cost: $49.95/month
   Includes: live streaming server and archived media server
   Includes: 40 gigs file storage (archived media)
   Includes: 160 gigs of bandwidth
   Suggested stream quality: up to 600 Kbps
   Suggested audience: 200 concurrent viewers, 800 viewer hrs/mo

3. High level media streaming package Cost: $99.95/month
   Includes: live streaming server and archived media server
   Includes: 80 gigs file storage (archived media)
   Includes: 320 gigs of bandwidth
   Suggested stream quality: up to 800 Kbps
   Suggested audience: 400 concurrent viewers, 1600 viewer hrs/mo

4. Custom quotes are available for larger needs.

We will need to know the following information to set up Live Streaming for your church:

1. The Domain Name for your church or school
2. The administrator's name
3. The administrators email address
4. Which of the packages you wish

Sign up for the Adventist Church Connect Service:
https://www.adventistchurchconnect.com/streaming