TIPS FOR HIGH-QUALITY ZOOM CONFERENCING

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Rocky Mountain Synod
Evangelical Lutheran Church in America
God's work. Our hands.

The Rocky Mountain Synod, ELCA, carried out an all-Zoom assembly on May 2, 2020. The Zoom platform provides the framework for a professional meeting experience, but it is not self-evident how to assure the highest quality video experience and most professional production without high-end equipment.

This information is written from the perspective of an Apple user, but it will generally translate to a Windows world. Attention to each of these four areas is essential for an excellent Zoom outcome:

- **Internet**
- **Equipment**
- **Studio**
- **Production**

1. INTERNET

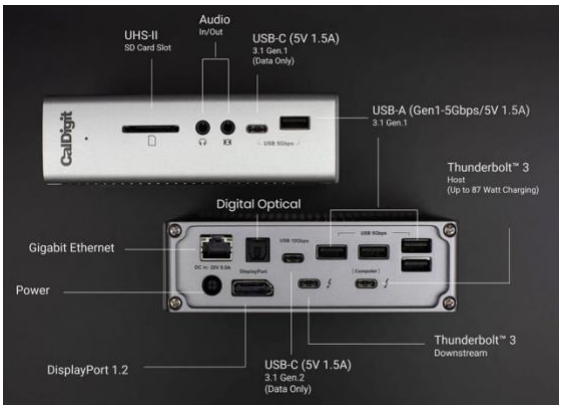
- The **internet *upload*** speed is what matters most. Test it at http://speedtest.net. For sending high quality video, Zoom recommends a *minimum* of 3.0 Mbps up/3.0 Mbps down.
- Use an **up-to-date modem and router**. Old equipment can slow down an otherwise excellent connection.
- Bypass potential issues with an unstable wireless signal by using a **hard-wired ethernet connection** to your computer.

2. EQUIPMENT

- A newer laptop with good specs is needed for the graphics-heavy video work. (For our assembly, I used a new 2020 MacBook Air in the mid-level configuration with the i5 chip and 16 GB memory. If using an older computer, do ample Zoom testing to assure good video quality is being sent.)
- A 1080p webcam. The built-in cameras in laptops are never good enough. For assembly we used the **Logitech Conference Cam BCC950** because we already use this in our conference rooms.
- Microphone. We have had good results with the **Philips 9172 Boundary Layer Conference Microphone.** Just one is needed for Zoom, placed on the lectern or music stand in front of the speaker. (In a conference room setting, four can be strung together).

- An audio **speaker** so the Zoom sound can be easily heard by all in the "studio."
- A **secondary monitor** connected to the computer is essential for having enough space on the screen for production and being able to smoothly start PowerPoint slides. Please note, the CalDigit hub, suggested below, has a new DP (DisplayPort) input, rather than HDMI. To attach the monitor to the hub you will need an **HDMI to DP cable** or an adapter.

- Long enough **ethernet cable** (CAT 5e or 6) to have a hard-wired connection into a wall jack or your router.
- Since newer computers typically have few ports, a hub is needed to attach all of the equipment to the computer. Newer Apple computers all have USB-C ports, which are "Thunderbolt 3" ports, meaning they can carry a huge amount of data AND charging capacity through one cable. (All Thunderbolt 3 cables are USB-C, but not all USB-C cables are Thunderbolt 3. Be careful with this. Look for the bolt of lightning icon for clarification.) There may be less expensive hubs available, but this professional **CalDigit TS3 Plus** ($230) has all the ports needed to connect *everything* together, along with pass-through charging through the one cable that connects to the laptop (included with the hub).

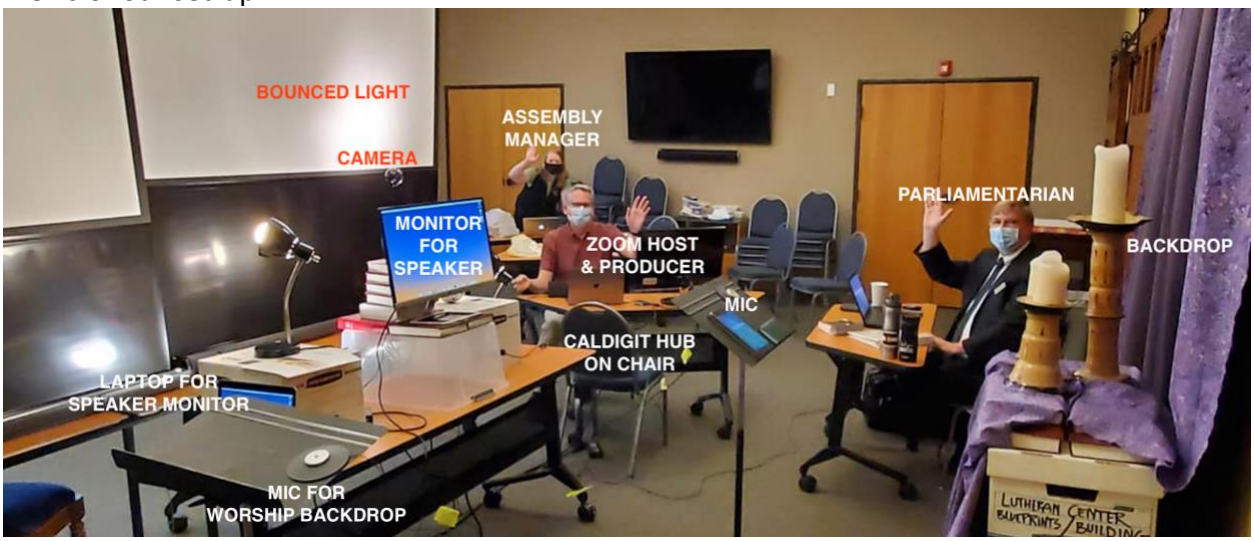


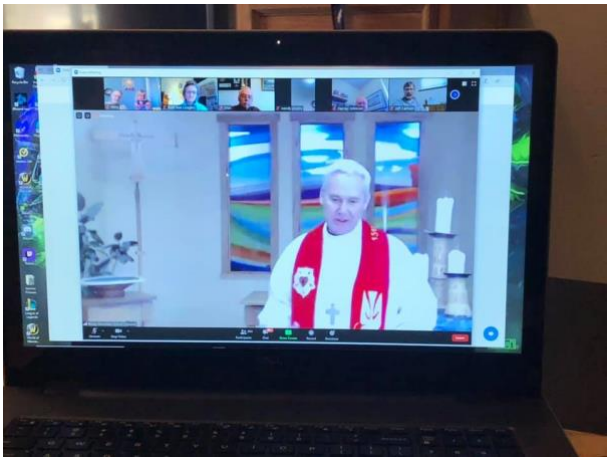
- The equipment above is for the **Zoom host** who is producing the meeting by cueing the visuals and beginning and ending them. The settings both within the computer's System Preferences and within the Zoom audio settings need to be carefully tested and double checked.
- A **second laptop and large monitor** is needed for simple purpose of the person speaking into the camera seeing a screen of Zoom attendees as well as the presented videos and slides in front of them. This computer is logged in as a simple user, not as a host or co-host. The microphone is off, and the sound volume all the way down so this computer has no sound input or output.
- A **third laptop and monitor** is needed in an adjoining room or offsite for an individual **made a Zoom co-host** to monitor the chat for requests for the floor, points of order, requests to be recognized for nominations, etc. This individual is also attending to the problem of attendees who turn their microphones on inadvertently, or who leave them on after speaking. A Zoom key command for "Mute all but the host" is essential. Mac: Control+Command+M; Windows: Alt+M.

3. STUDIO

- Pay attention to **the lighting and the background**. The camera should be at about eye-level.
- The Rocky Mountain Synod conference room has many tall windows, which cast harsh daylight on the speaker. We blocked off the area with projection screens and bounced incandescent light off the white screens. We also created a pleasing backdrop, perpendicular to our worship area so we could easily switch between the worship background and the meeting background by turning the camera 90 degrees. **Consider a green screen and lighting package**, which would solve a lot of issues for under $200 and assure the best quality. Within Zoom, change the background as desired, but opt for simple, non-distracting backgrounds. Don't use the Zoom background feature without a green screen for professional results.

- Views of our set-up:

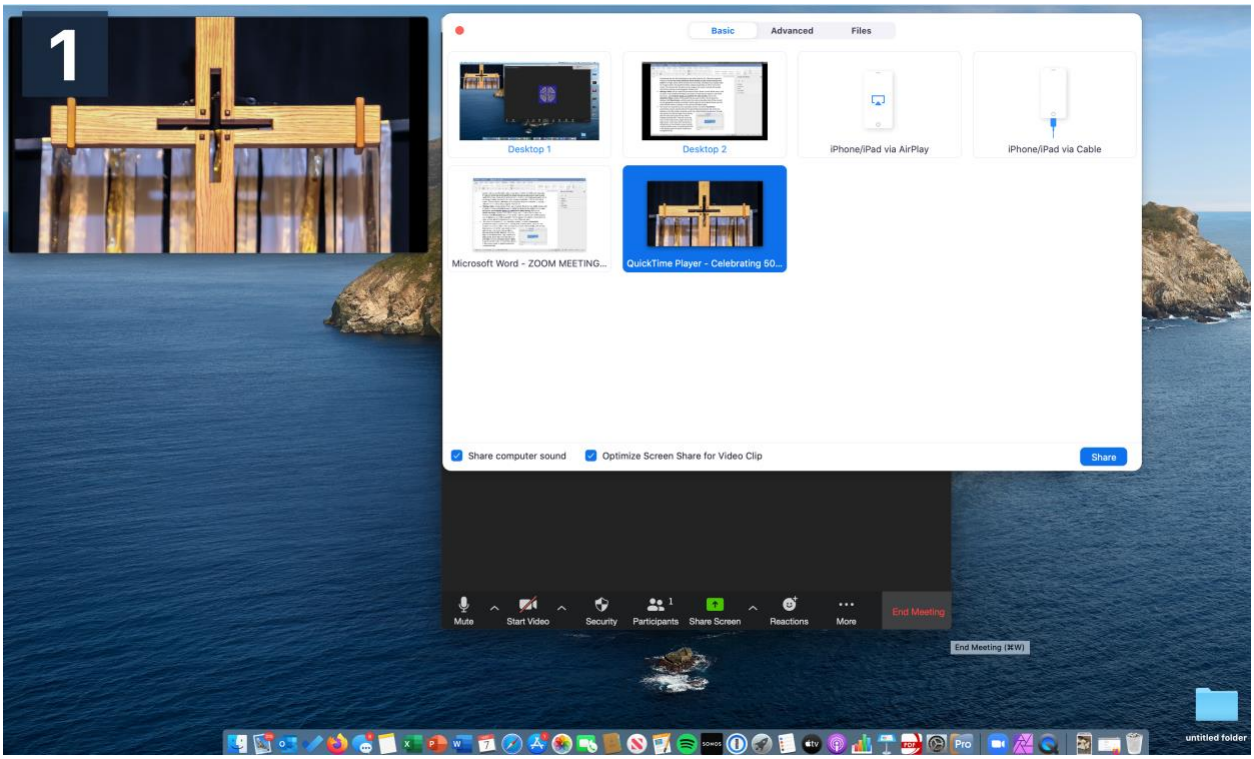




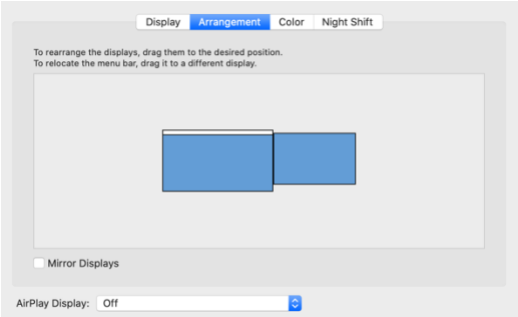
4. PRODUCTION

- My goal was to **maximize the quality** of shared videos and to **minimize the distraction** of amateur "desktop views" where the computer screen clutter is presented with the mouse hovering about to start and end videos or PowerPoint slides.
- After much trial and testing, I learned the secrets to **eliminating poor video feeds** that have a low, jerky frame rate. I cannot control what is received with a poor connection on the receiver end, but I can control what is sent. That information follows.
- **Do not embed videos** within PowerPoint or Keynote and do not use a presentation program like ProPresenter. The video quality will be poor.

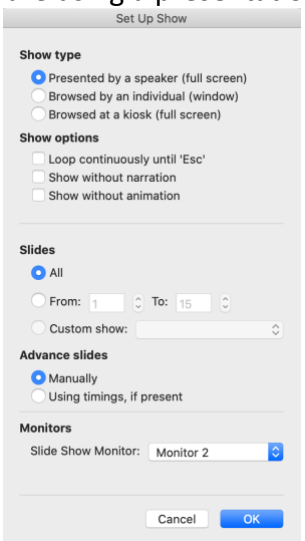
- **1080p video files are not necessary** and may actually be detrimental due to too much data. (On a Mac, call up large HD files and re-save video files using the 720p option.)
- On an Apple computer, only use **QuickTime Player** to present videos. (Windows users: I recommend you test this information to see what works for you.) My most important finding is that **the size of the QuickTime movie window on your screen must be very small.** If it is large, Zoom will try and send too much data, resulting in poor quality video. On a large monitor, the QuickTime Player window should take up 1/9 to 1/12 of the screen. The controls will, therefore, be very large as the movie is started. But quickly click off the controls so they disappear. Practice this!
- **Sharing a video:** call up a video file you want to share. Make the viewer window small (see screenshot below). Within Zoom, click on Share Screen. In the window that follows, be certain to check the two options in the lower left corner: **Share computer sound**, and **Optimize Screen Share for Video Clip**. Click on the **QuickTime Player** window of the specific file you want to share. *Do not share the desktop*. Click **Share**, and then start the movie and quickly click off the controls so they disappear as quickly as possible. *Practice this.* Do not accidently hover over the video window while it is playing, or the controls will appear again. As you begin a share, your large monitor should look similar to this:



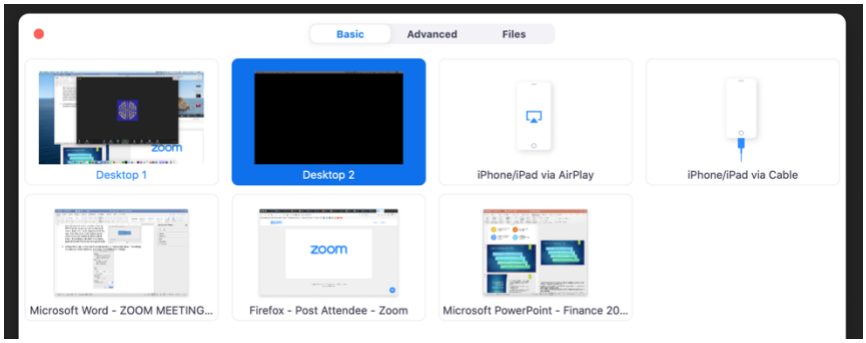
- The reason it is essential to use a secondary monitor is so that **a PowerPoint presentation may be started** without the ugly desktop being shared. Set up the two displays so that the laptop computer screen has a black desktop background. Arrange the monitors so that the larger one is primary with the menu bar across the top. Mirror Displays should be OFF. If the menu bar across the top is on the small screen, drag it over to the large screen. In this way, there should be no distractions on the computer screen monitor. It will be a black screen. It should look like this in the displays panel of System Preferences, arrangement tab:



- In PowerPoint, click on the Slide Show tab and click on "Set Up Slide Show." The settings should be as follows, unless you are using a presentation with timings:

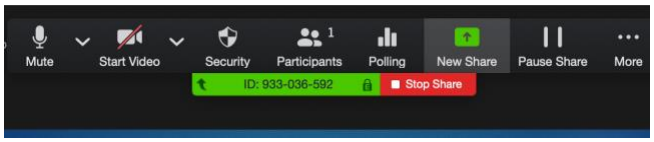


- In Zoom. Click on Share Screen and then select the black screen called "Desktop 2," NOT the PowerPoint window:

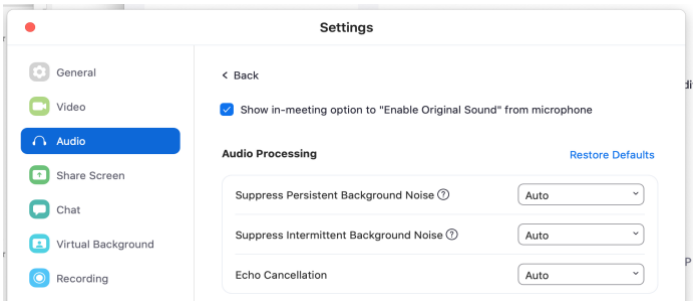


- After you share, then, in the PowerPoint program, **start the presentation**, which will send the presentation to Desktop 2 and out to the Zoom viewers.

- At the conclusion of the PPT presentation, add an extra black screen slide so you don't accidentally end the show and display your desktop. Then **either "Stop Share" or select "New Share"** at the top of the screen to immediately move to a video that you have ready to share.



- **Prepare** by having all of the videos and presentations organized well and also have them both synced to Dropbox and/or copied onto a Flash drive, should a backup plan be needed.
- Using iMovie, easily **combine videos together that will be shown in succession**, such as a series of partner ministry videos or worship videos that are in succession, minimizing every possible screen share start and stop.
- We recommend **recording all musical pieces in advance** and presenting them as videos. If you choose to present live music, it is essential that you have a quality microphone and also change the Zoom Setting to allow for the "Enable Original Sound" option so that Zoom does not try and adjust it, thinking there is a lot of background noise. That option will then appear in the upper left corner of the Zoom screen. Find the Audio option, then click on "Advanced" to locate this screen:



- Carefully review the **video recording options** and test the settings so that you are certain to end up with a usable recording to share. We had issues in this area.
- View of my **working screen** as Zoom host: