A Basic Primer on Manageable Technology for Small and Medium Sized Parishes

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PURPOSE & OVERVIEW

The purpose of this document is to help guide small to midsize congregations in the purchase and installation of audio-visual (AV) equipment necessary to provide an "online or digital presence" to their congregations and broader communities.

We are almost eight months into this pandemic (as of Oct. 2020), and it shows no signs of abating any time soon. Tight restrictions on in-person gatherings have made all of us scramble to find solutions, and as the dust began to settle on this "new normal," online gatherings became commonplace. We normally have a lengthy lead-in time for the adoption of new technologies. This pandemic has accelerated this process. Although there was already a trend towards a greater incidence of online worship ministry, a process that might ordinarily have taken ten years is now taking ten months. There is a growing consensus that online worship ministry should now be considered normative and essential for every parish. It has become a missionary imperative as central as in-person worship. The question every parish needs to ask is not 'if?' but 'how?' to provide a ministry of online worship.

Because online worship is a missionary imperative, considerations of how to provide it should be driven not primarily by money but by mission. However, we know that many of our small to medium-sized congregations have ever tightening budgets. Fortunately, there are a wide variety of ways for your parish to have an online presence. It could be that you already have all of the pieces you need to make it happen, or you may decide you need to invest in a little more technology. Either way, being equipped with some basic knowledge will help you make informed decisions moving forward.

SO WHAT DO I NEED?

Having considered the whys and ifs, the next consideration is what tools you need to meet your mission. Every parish has a different context and a different ethos. For some, the way to go is a polished broadcast experience with high production attributes. For others, the way to go is a more straightforward and intimate setup. Neither is better than the other. For some, it will be preferable

to live-stream (that is to say that the online worship is happening at the same time as the in-person worship, with typically less than half a minute delay). For others, this won't be critical, and pre-recorded services will be ideal.

Whether you go the live or the pre-recorded route, there are a small handful of obvious ways to go. For your worship leaders and the congregation to be able to all participate live, the most obvious ways to go are meeting software, such as Zoom, Google Meet, or WebEx. For live-streaming where the church's liturgical action is broadcast, but the congregation is not taking a live role, the best avenues are Facebook or YouTube. There are other options, such as Vimeo or local cable TV channels.

If you want to go the Zoom or Google Meet route, you will need to consider how tech-savvy your potential congregation is. For a Zoom meeting, your congregation will have to download the Zoom client (the software that resides on your computer), and joining a Zoom meeting is far from trouble-free for everyone. But if that is all surmountable, then the advantage of this is that everyone is live and can participate. Google Meet does not require users to download a client app but is not in widespread use and, therefore, can cause user-anxiety. With either of these or any meeting software, another consideration is that these work better for very small congregations, since once one has more than about 20 participants, the experience may become too diluted.

Facebook and YouTube allow you to live-stream to their sites but require a parish to have an account with either of these social media providers. A Facebook Page is the way to go since they are publicly accessible and available and not just confined to a select group of individuals who have asked to belong. Similarly, YouTube content can be configured to allow public access.

Whether you go the live-meeting or Facebook/YouTube route, the next consideration is location. Do you want to lead this from your church or your living room? Are you trying to maintain the 'normality' of the liturgical year from the altar, with the seasonal colors, flowers, eucharistic celebration, music? Or are you trying to communicate that we are still in 'different' times

and awaiting a return to the sacred spaces of before? Either is a perfectly reasonable way forward.

A consistent, reliable signal is crucial to pull all of this off. Many of our churches have are very old, have thick walls, and are of odd shapes. All of these conspire against a good, reliable WiFi signal. If you chose to stream your video from a location on campus that does not have a strong, reliable signal, never fear. There are several ways to get a consistent, reliable WiFi signal where you need it:

1. Buy some simple WiFi extenders that plug into a standard electrical outlet. These will pick up the WiFi signal from your router and boost it to take it further. A couple of these, strategically placed, may do the job for you.
2. Invest in a more expensive solution of a WiFi mesh network, such as Google Nest mesh. A mesh network is different from a simple extender. The mesh points will work together strategically at any given time to fill the space with good WiFi and are continually adapting to the circumstances. You will probably need up to 6 of these to cover a typical church campus.
3. Have a hard-wired ethernet connection direct from your main internet modem/router into your sanctuary. From there, you can add a WiFi router specifically for the sanctuary.

The last thing to consider is installation. Depending on your new setup there may be a need to install cameras and run cords. Installation can be one of the highest costs for setting up your live streaming capabilities. Fortunately, most of us have at least one great handy person in our congregation that can handle this task. So before paying a ton on installation labor, determine how much of it your congregation can do on its own.

PROCESS CHECKLIST

FIRST - CONSIDER YOUR SPACE. (SIZE AND USE, BUILDINGS)
SECOND – ASK: "Am I going to produce recorded or live video?"

1. Live stream broadcast (real time, one-way broadcast of your worship)
2. Interactive live-stream broadcast (real time, two-way, broadcast of your worship)
3. Pre-record for later broadcast (participants pre-record their segments, which are then edited)

CHOOSE YOUR STREAMING PROVIDER(S).
1. Meeting apps like Zoom or Google Meet
2. Broadcast apps like YouTube, Facebook or Vimeo

Then you might want to 'embed' your meeting or broadcast on your church website, so that it's really easy for people to find and you can cut out ads and other distractions. Doing this can be easy (adding a URL link) or a little more complicated (adding supplied embed code into the code of your website).

CHOOSE YOUR VIDEO EQUIPMENT SETUP
1. phone/tablet and tripod
2. Single camera setup
   - Camera
   - Computer
   - tripod/mount
   - cabling
   - production software (recommended)
3. multiple camera setup
   - cameras
   - switching device
   - computer
   - tripods/mounts
   - cabling
   - production software (recommended)

BUILD YOUR TEAM.
4. Installer(s)
5. AV operator(s)
6. IT "tech" guy
7. How do we budget for this?

VIDEO BASICS

As the name implies, Audio-Visual (AV) is a partnership of equipment which gathers optical and sound inputs and marries them together. Once you have decided what format to use and where you will broadcast from, you are ready to get your equipment set up and configured. Any smartphone or tablet from the last five years combined with a tripod will give you excellent video definition for streaming or recording.

*Pro-tip: For the best picture, you will want to use the camera on the back of the device, not the "selfie" camera.

Always orient your smartphone/tablet to video in landscape orientation (horizontal) since people will watch videos typically in this viewing format.

*Pro-tip: Plug your device in so the battery doesn't die mid service and put your device in airplane mode while setting it to silent just in case you get a notification!

There are, of course, more sophisticated video setups that can be employed to enhance your stream. Using DVR cameras can improve the picture and can be mounted to avoid throwing off your beautiful sanctuary aesthetics. You can of course use a DSLR camera on a tripod, too. Another higher-end camera option is what is known as a "PTZ" camera. PTZ is merely short for pan, tilt, and zoom. These cameras offer the ability to adjust the pan, tilt, and zoom remotely. This ability is helpful if the camera is mounted in an out of reach place. This allows you to cover a lot more of the sanctuary. Whichever type of camera you use, having more than one is highly preferable, such you can get two camera angles, which will really enhance the viewer's experience.

With a two (or more) camera set-up, you will either need video-editing software if you prerecord your services, cutting from one camera to another. Most PCs and Macs these days come preloaded with video-editing software, and a lot of it is very straightforward and intuitive to use. But if you are intending to livestream your services with more than one camera, you will need some kind of switching device that allows you to switch from one

camera feed to another. This can be as simple as an iPad app that comes with some PTZ cameras (and also allows you to do the panning, tilting and zooming of the camera right from the app via WiFi) or you can even pair it with broadcast software to make it even more professional in appearance.

SOUND SYSTEM BASICS

Audio is the other half of AV. Making sure that everyone can hear clearly what is being said in person and online is a matter of hospitality. Most churches already have some sort of sound system, but they do need to be updated and replaced from time to time.

Sound systems seem to have an endless amount of parts, and it can be overwhelming. The truth is there can be a lot of different components of equipment, but each sound system is built on three major components: the mixing board (mixer), the amplifier, and the speakers. You don't need the amplifier or speakers in order to stream to the internet, but you do need them for your in-person congregation to hear any pre-recorded material you might have, such as hymns or readers, as well as simply making the live speaking in your sanctuary audible enough for the in-person congregation. You don't have to know everything about live sound to make an informed choice in purchasing the right equipment for your church. However, it is important to have the basics down, so that you don't get oversold. So, let's delve into each piece and its role.

The Mixer
The mixing board is the part of the sound system into which all of the different things that make sound get plugged. In most churches, this will be most likely microphones; however, this could also include a guitar, keyboard, etc. The mixer is broken up into "channels." Each channel will have an input for a microphone (or instrument, etc.), and each channel will have a variety of knobs (volume, eq, and others.) that will help fine tune the sound. One of the most important knobs other than the volume slider is the 'gain'. This is what adjusts the sensitivity of the mixing board to the input (such as a microphone). Every audio channel has an input side and an output side. 'Gain' is the most important adjustment knob on the input side. The volume slider is the most

important control on the output side. Then there will be a "main" volume knob or slider that will adjust the volume of all of the channels mixed into one.

The mixing board is definitely the most complicated part of the sound system and the piece that comes in the most different varieties. There isn't a need for a large, complicated mixing board for most of our small and medium sized churches. You will most likely have a microphone on the pulpit and one on the lectern. You may also have a wireless mic for the celebrant. Mixing boards come in different sizes depending on the number of channels you need and are typically sold in multiples of four (4, 8, 16, 24, etc.). It is important to think ahead about the number of channels you need and leave a little room for growth!

Amplifier
Now that you have all of your microphones plugged into the mixing board, you need something to take the "signal" you have produced and increase it to the point that it can be heard. So, the amplifier is the part of the system that does that. It is like the engine of a car, and like car engines, they come in different sizes by power. In this case, instead of horsepower, amplifiers are measured in wattage. For our small and medium sized churches, you will more than likely not need more than 250 watts.

Speakers
The speakers are probably the most straightforward part of the system because they are part that we are all used to seeing. There is a plethora of different kinds of speakers, but for our purposes, there are three kinds: the tweeter (high range), the woofer (mid and low range), and the subwoofer (very low range). Unless you are running a bass guitar or bass drum through your sound system, you will not need a subwoofer. Fortunately, these days you can get "full range" speaker cabinets that usually contain a woofer and tweeter and are referred to as a two-way system. Speaker cabinets come in different options based on the size of the speakers (usually the woofer) and by the wattage rating. The size of the woofers you need really depends on what kind of sounds you are putting through your sound system. If it is almost entirely microphones for voices, you won't need woofers any larger than 12". It is also important to think about how the speakers will affect the aesthetics in our beautiful and old sanctuaries.

CABLING BASICS

Video

- Recording or streaming from a smartphone will not require much more than the charging cable to be plugged in.
- For multiple smartphone set-ups – again, no special cables needed
- For DSLRs or consumer-grade video cameras, you might need USB cables.
- For most higher-end video cameras, including PTZ you will need SD cables. All these are standard co-axial cable like you'd have to connect your cable TV at home, but with a different connector on the end, called a BNC connector.
- PTZ cameras will also need a wired network connection with a CAT 5e or CAT 6

Audio

- If you're using a smartphone you can just use the built-in microphone, but it won't pick up a wide-range of voices in a space like a church sanctuary, so for people to really hear well, you'll need to plug in an external microphone, preferably a wireless 'lavalier' mic that the worship leader wears.
- If you are using a mixing board, then the inputs into these will use either three pin XLR plugs and sockets or 1/4" jack plugs and sockets.
- Outputs from a mixing board to speakers might use either XLR or 1/4" jack connectors, or possibly the smaller 3.5mm jack connector/
- Running cables is best done in roof spaces and basements like other electrical wiring, and coming up through walls into a regular-sized receptacle box, just like those for electrical sockets, except with a different cover plate that has XLR, or jack, or (in the case of video cabling) BNC connectors.