

# Troubleshooting Prep

Contributed by Colin Burch, Salem Fields Community Church

It is Sunday morning and the service is about to start. However, the worship leader's microphone is dead. The audio engineer has the deer in the headlights look while the worship leader is giving you a look that just might have the ability to turn someone into a pillar of salt.

We have all been there. We start scrambling to find the problem and hope to have it fixed before too many people start to stare back at the control booth.

To effectively troubleshoot a problem, you must be prepared. The first step in being prepared is to memorize the signal chains of the various systems. Starting with an input on the stage, you should be able to mentally trace that signal through the system until it reaches the speakers.

Flowchart Software

- FlowChart.NET: \$259
- SmartDraw: \$197
- Microsoft Visio: \$259
- EDraw Max: \$79.95
- WizFlow: \$44.95
- Dia: Free
- JGraph: Free

One of the best ways to visualize this is to create a flow chart of your audio, video and lighting systems. Leave nothing out. Include every single piece of equipment and cable. Creating a flow chart can be a daunting task. But using flow charts is one of the most effective ways to train volunteers and can be a time-saver when troubleshooting during a live event (see the insert for a list of flow chart software).

Here is a very basic example of an audio signal flowchart. Use this as a starting point. You will want to include all of the audio, video and lighting signal chains. No cabling or routing detail is too small. If you leave a connection out, when it fails (and it will), the volunteer production team will begin to troubleshoot, they may not be able to find the point of failure in a timely manner.

The next step in being prepared is to know how to use all of the equipment that is part of the church production systems. If you are an audio engineer, look around the control booth at every knob, fader, button, LED, meter and cable. Identify the purpose and functionality of each item as you scan. When you find an item that you can not explain pick up the manual and learn about that feature. If you do not know how something works, you can not repair it.

Side note: All of the manuals for all of equipment should be stored in the control booth. If a manual is left in the box sitting on the top shelf of a closet, the production team will not have access to the most valuable informational resource available while troubleshooting a problem.

Step three in being prepared to troubleshoot is to make sure you have all of the necessary tools to examine, test and repair sitting in the control booth. It does not have to anything elaborate - a small box will do. But every control booth should have:

- Various sizes of Phillips and flathead screwdrivers
- Allen or hex wrenches (metric and standard)
- Flashlight
- Various pliers (especially needle nose)
- Super glue
- Gaff tape
- Multi-meter
- Soldering iron and solder
- Wire strippers

Next, the production team will need to prepare contingency plans. Many times during a live event we do not have time to troubleshoot and fix a problem. For example, if the teaching pastor's microphone dies, it is usually less distracting for them to pick up the spare microphone and continue with the message.

Make sure to inform everyone of the contingency plans that are in place. If the pastor's microphone dies, he should not have to make any verbal comment or question on the situation. He should already know to simply pick up the spare mic and continue as if nothing went wrong.

Not every element in the production systems needs a contingency plan. Identify the mission critical functions in the production systems and create back-ups and work-arounds for them. These elements will vary from church to church and sometimes from service to service. A video venue should certainly have two or three contingency plans in place to ensure the message on video is not interrupted. While a more traditional service may only need an extra wired

microphone ready to go at a moment's notice

Contingency plans almost always require backup equipment that will need to be considered during budget planning. Some items to consider are:

- extra microphones and microphone cables
  - a backup laptop for lyrics and video presentation
  - uninterrupted power supplies for computers and projectors
  - a large supply of high quality batteries
  - at least one duplicate cable for every type of cable used
  - a large supply of various cable adapters
- This may seem like a lot to spend on extra equipment. But when you are in the middle of a service and a key component fails causing the worship to come to a complete halt, ask yourself how much you would pay at that moment to make the problem go away.

It has been said many times and many ways that no plan survives first contact with the enemy. You will find that the best contingency plans will need to be modified on the fly during a live event. Albert Einstein said that "imagination is more important than knowledge". When you see that the backup plan is not quite sufficient for the moment, the key is not to panic. Use your foundational knowledge of your system's signal flow, how the equipment operates, the tools and extra equipment you have on hand and improvise a solution.

Now that we have an understanding of the foundations of troubleshooting, next time we will discuss diagnosing, reproducing and applying a solution to the problem.

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