

# Why am I hearing noise in my studio monitors?

**Q:** Why am I hearing noise in my studio monitors?

**A:** The presence of noise in the playback stream has been a tricky problem since the inception of speaker technology. This article should help you troubleshoot your setup so that you can isolate the component causing the noise and act accordingly. Below are the most common reasons for your monitors to play back a noisy signal, as well as troubleshooting tips for how to remove noise.

## The Definitions of Noise

There are many types of noise, all with different meanings and causes. Noise is merely a symptom of some underlying cause, usually not a problem in and of itself. It is important to figure out what type of noise you are experiencing in order to treat it properly. Below is a list of the most common types of noise, as well as brief descriptors of their possible causes and solutions.

### "White" Noise

"White" noise is noise that contains all, or most, elements of the frequency spectrum at random. It is heard as constant, high-frequency "hiss" resembling the rushing of air or a television turned to a dead channel.

#### **Solution:**

White noise is most often caused by the gain, or amplification, turned up too high at some point, either on the monitor, from within software, or from the audio interface. Check the levels of your interface, software, and speakers to make sure that nothing is being over-amplified.

*Note: Highly sensitive microphones, such as most condensers, can pick up ambient noise in the room that may not be audible to you, such as air conditioning, outside noise, wind, etc. Please keep environmental noise in mind when recording.*

### Digital Distortion

Digital distortion is noise accompanied by "grinding" or "buzzing" sounds that appear completely unnatural. Often, they follow the processes of the computer being used; for instance, if one opens a program on their system, this noise may alter along with this process.

#### **Solution:**

Digital distortion is usually either caused by an issue with the audio interface, or the monitors being connected to the same power strip/socket as the computer. Make sure your monitors/playback solutions are connected to a separate power source than your computer and

other digital hardware. Or, make sure you are using a quality power conditioner. Check with the support for your particular interface for more information on possible driver issues, fixes, and optimizations.

## **Feedback**

Feedback is a phenomena that occurs when a microphone is placed too close to a playback speaker; this causes the mic to capture the audio that the speaker is emanating, then play it back through the speaker, then capture it again - creating a feedback loop. As this occurs, a high-pitched whine or squealing sound may occur. You most likely have heard feedback on television programs, when an amateur band is setting up for sound check.

### **Solution:**

Feedback can be resolved easily by using headphones during tracking rather than your speakers; this way, your mic will not pick up any audio from the speakers and you'll get a clean signal. If headphones are not an option, you could record further away from the speakers so that feedback does not occur, or turn down the gain for the mic you are using.

## **Snap, Crackle, and Pops**

These sounds need no description, but there are two distinct variants of this noise:

- If the noise is random, then it most likely is an issue involving software setup and configuration. The device's buffer or block size may need to be raised, or there may be an incompatibility issue.
- If the noise follows a rhythm, such as a click every half-second, it could be the result of a damaged interface or improper driver install.

### **Solution:**

Popping, clicking, crackling, or other similar sounds are usually the result of a software/driver issue with the interface. The most common reasons for these sounds to occur include having the interface's "buffer" set too low, the presence of wireless or BlueTooth adapters running on the system, or a software incompatibility. Check with support for your particular interface for any issues involving incompatibilities, and make sure your computer meets the minimum system requirements for your hardware and software.

If you are experiencing these sounds, you will want to isolate the speakers from the interface and check the interface with a different playback system, such as headphones - this would verify where the noise is coming from.

## **Tips for Troubleshooting Noise**

In general, follow these tips to reduce all forms of line noise and regain a clear signal:

- Use "balanced" cables. These cables are much less susceptible to environmental interference and can carry a signal with high integrity over a longer length than other forms of cabling. If at all possible, use balanced cables to connect your interface to your monitors. Balanced cables contain three lines: two identical transmission lines as a twisted pair, encased in a third shield. You will find balanced cabling most often in the form of 1/4" TRS or XLR. If you aren't sure what these cables look like, check out [this article](#).
- Connect your speakers to a different power strip or supply than your computer. If the speakers are connected to the same source as the computer and interface, they could be receiving a ground, resulting in noise. Isolating the speakers to their own source can rectify many noise issues.
- Use a power conditioner. Not only will a quality power conditioner cut down on noise in the line, it will protect your equipment from power spikes and surges.
- Don't over-amplify! Turning anything up too high will bring the "noise floor" to the front of your mix. Every electronic audio device with variable gain can be "turned up" to a level where inherent noisy artifacts become audible. Make sure that you are not recording too hot; additionally, make sure that your speakers, or interface output volume, are not turned up too high.
- The over-usage of compression effects can often make the noise-floor prominent. You may wish to set your compressor's threshold to a higher value and ratio to a lower value to minimize this negative effect; this will also give your mix much more dynamic range.
- Use the process of elimination. If there's noise in the line, disconnect each component one-at-a-time to find the source. For instance, if you are hearing noise, unplug the speakers from the interface and plug them into another source. If the noise goes away, then you know the sound must be resulting somewhere from the interface or computer. Using the process of elimination will allow you to hone in on noise issues with ease.