Cougar Display
Technical Configuration Guide

Table of Contents

Selecting Monitors for Your MFD Cougars

There are several ways you can hook up your MFD's to monitors and the choice depends upon your budget, cable requirements and ability to extend the Windows desktop.

The basic concept is that you want to under pin your Cougar MFDs with some sort of active display so you can get EDCD to render to a window. In the sections below you'll find some of my thoughts on how this can be achieved and the relative pros and cons of each method.

Secondary Monitor

In the simplest case you could just attach a secondary monitor to your existing single monitor configuration by plugging in a HDMI or DVI cable – all graphics cards and laptops support at least two monitors.
I highly recommend a 4K monitor in this configuration because the pixel density is much greater than a HD monitor and thus the window resolution under the Cougar will increase from 500x500 pixels to something like 1000x800 (just a guess as I don't own a 4K monitor).

Advantages:

- Simple setup, minimal number of cables required (power cable and HDMI)
- Cheap - for many people, no additional cost involved as they already own a second monitor
- Second monitor useful for general use, so not 'dedicated' only for Elite Dangerous

Disadvantages:

- Cougar placement is limited to the edges of the monitors
- Other areas of the screen not covered by the cougars are visible
- Doesn't look like a real cockpit extension
- Good luck making the cougars stay attached to the monitor!

USB Monitors

There are a couple of choices here. You can buy a dedicated monitor which is self-powered by a single USB cable, or you can buy any hobbyist (Raspberry Pi) LED/LCD screen and attached it as a second/third monitor.
You can buy a range of sizes from 7 inch, 8 inch or more (although there's not much point). Given the size of the MFD Cougars, I recommend the 8 inch monitor to reduce the amount of screen not covered by the Cougar and yet retain as much of the display as possible so as not to lose resolution. With a 7 inch monitor, the maximum resolution is typically 800x480 pixels, where as the 8-inch monitor is 800x600 pixels or 1024x768. Also, bear in mind that the area of the display outsize of the physical dimensions of the Cougar is wasted, so in reality both displays will likely show a 480x480 or 500x500 pixel window at most.

Touch Screen

If you purchase a touch screen variant of the monitor, you can save yourself the cost of the MFD Cougar, although some people might prefer the look tactile feel of the Cougars.

USB Powered Monitors

These are the best option in terms of cable management and simplicity. A single cable is all that is needed to provide both picture and power and Windows will extend the desktop to one or many USB monitors. An example of a decent 7-inch monitor is available here.

Advantages:

- Single cable required (USB 2.0/3.0 connection)

Disadvantage:

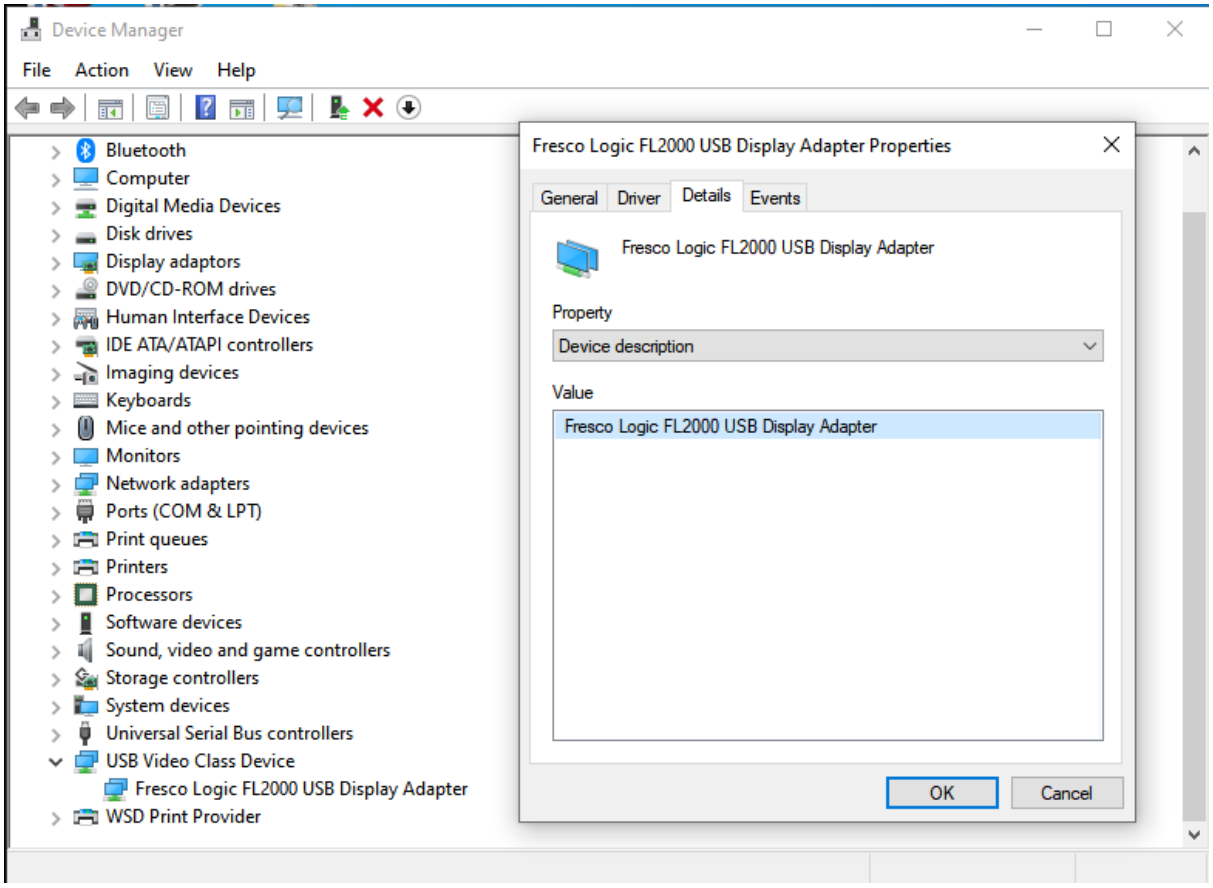
- Price – tends to be more expensive than a 4K monitor!
- Limited choice
- Not everyone wants a monitor with a built-in stand (although you probably don't have to connect it).
- Limit colour space management/brightness control

Hobbyist Monitors

There are plenty of Raspberry Pi monitors available on Amazon in various kit or non-kit formats. I prefer the non-kit versions (which come with a plastic bezel around the display – just like a normal monitor) so that I don't have to build my own case. These units are cheap, and come in many different sizes – so again I'd recommend an 8-inch version (having bought a 7 inch, the 8 inch is a better fit with the Cougar). There are some vendors which offer these units with stands and some without – so again it depends on how you want to use them and if you are building a cockpit to mount them. Here's a 7 inch one I bought.

To connect these monitors (typically via HDMI), you will need buy a “USB 3.0 to HDMI adaptor”. These are fairly cheap at about £15 from amazon.

When you plug one into the USB port, you’ll notice a new USB device in your Windows explorer (like a USB pen drive). Click on it, and you’ll see a driver that you can install.



If you own a brand spanking new PC (one with USB-C / 3.1 port), then in theory you can power the monitors directly with the same USB cable - since the latest specification allows for both power and picture on the same cable, and additionally drive the display with a higher resolution too due to the increased available bandwidth.

For those with Display port connectivity on their GPU, you can attach to LCD/LED screens without the need for any kind of adapter since you can buy dedicated cables for about £5.

Advantages:

- Cheap
- Simple way to add multiple displays to Windows without adding extra graphics cards
- Lots of choice
- Easy to build into a cockpit

Disadvantages:

- USB 3.0 resolution limited to 800x600 / 1024x768 max
- Bandwidth can become a consideration. Best to use separate USB 3.0 / 3.1 ports per monitor.
- Limited brightness / colour control on the monitors. (However, EDCD has the ability to mitigate with configurable gamma and exposure settings).

Add a second Graphics Card

With this option you get some serious advantages. Firstly, you can now add extra DHMI, DVI or Display port monitors to your system easily. Secondly, utility apps like this one can be configured to run off the newly inserted GPU to ensure that Elite maintains maximum framerate on your existing GPU.

MSI GT 710 1GD3H LP NVIDIA GeForce GT 710 PCI Express 2.0 1 GB Graphics Card

I have looked on various PC component outlets and both AMD and nVidia offer a low entry dedicated GPU. Amazon do sell nVidia cards for less than £30 – I can't speak about general gaming performance, but we only need it to render EDCD so even low-end (modern) GPUs should be able to cope.
I would recommend sticking with a single vendor within a system – ie don't mix nVidia with AMD and visa versa (because they both have tools and utilities to control and extend the desktop, video decoding, etc and you don't want to increase the chance of conflicts).

Advantages:

- Adds multiple monitors easily, without USB adaptors
- Supports any resolution (that the monitor supports)
- No bandwidth limitations
- Frees up USB ports
- No problems with brightness / colour control / gamma

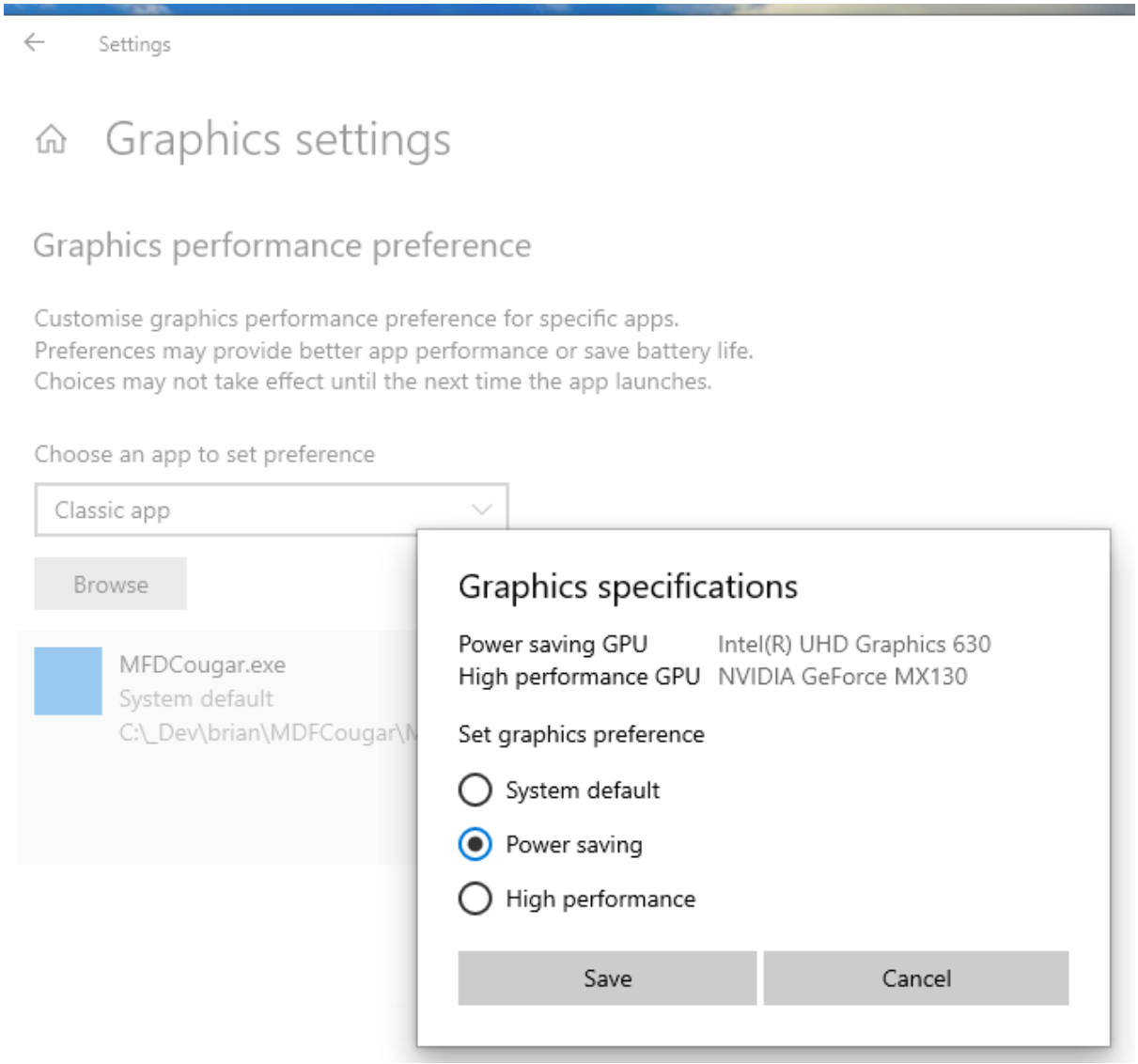
Disadvantages:

- Need a PC which can accommodate a second GPU (PCI express x4/x8/x16 slot)
- Can cost more than a couple of "USB to HDMI converters"

Configuring EDCD with a Multi-GPU System

On systems with multiple GPUs, you can run EDCD on the lesser GPU by associating the application with your GPU of choice. If Elite is using the nVidia GPU (for example), then you can associate the application to the remaining GPU.

On Windows 10, right-click the desktop → Display Settings → Graphics Settings (listed under Multiple Displays heading) → Graphics Performance Preference → Choose an app to set preference (choose a classic app) and browse for EDCD executable (aka MFDCougar.exe)

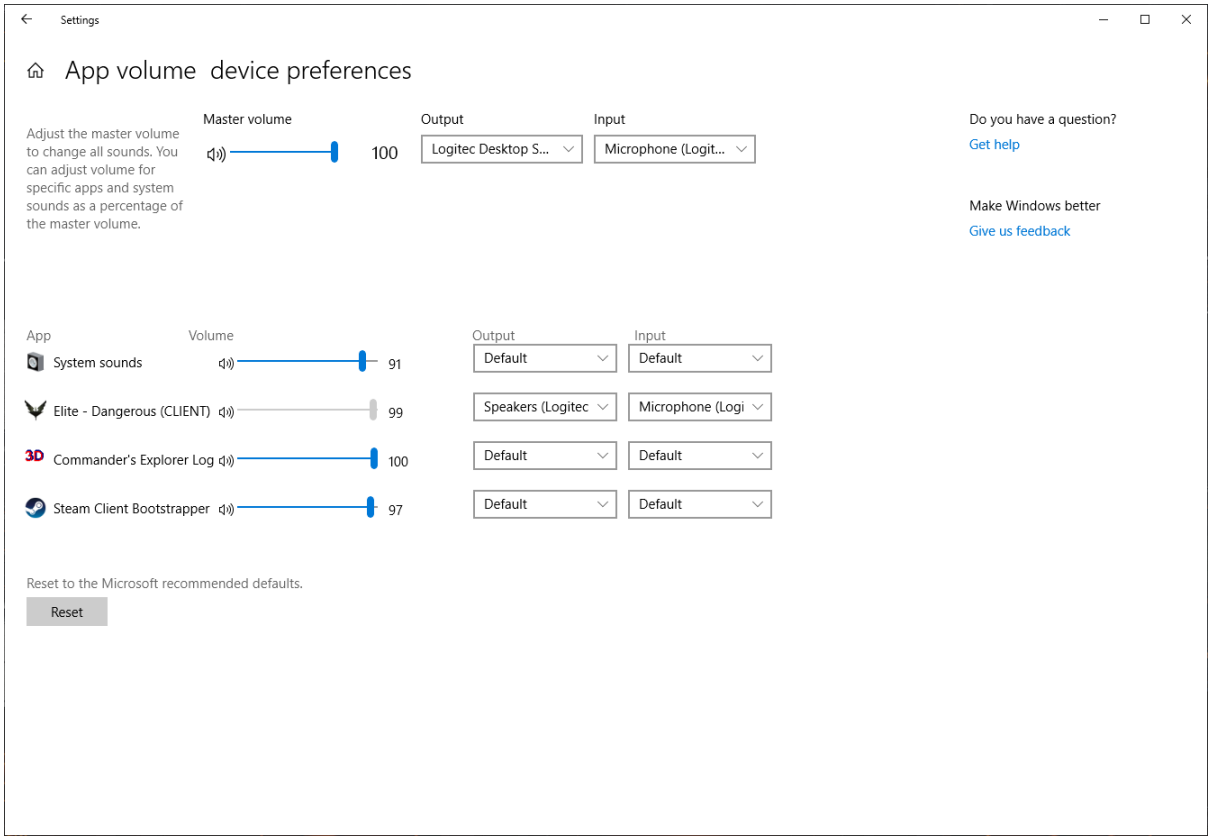


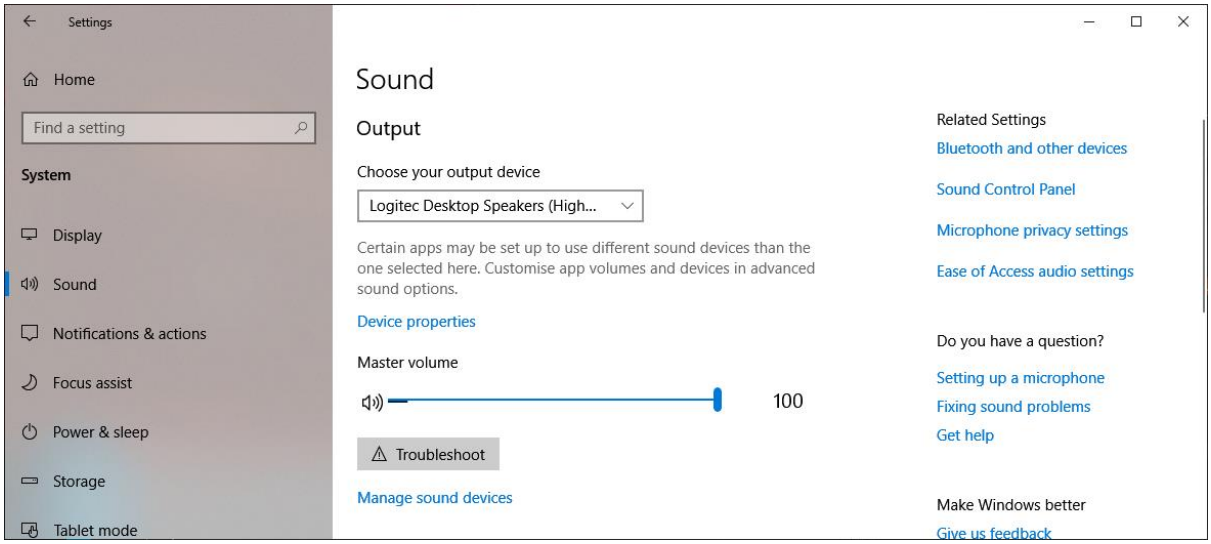
In this example, selecting “Power saving” option would make use of the Intel GPU, and selecting “High performance” would make use of the nVidia GPU.

Sound

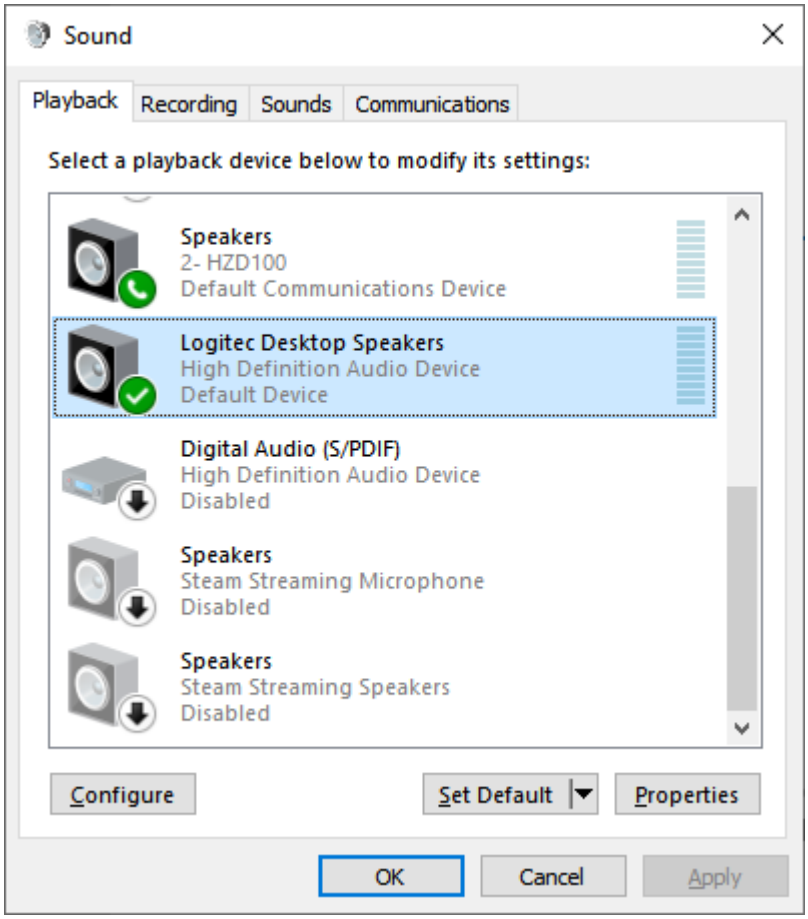
Every Windows update seems to make changes to my rig, which is rather annoying. I have included this section so that you know that you can associate MFD Cougar with a particular speaker set (eg headphones) so that the speech doesn't come from a different set of speakers than the main game – which would sound a little odd.

Also, I have included some settings which you may want to reference when Windows Update stops your speakers from working – ensure you have disabled the "Allow applications to take exclusive control" and disabled "Disable all enhancements". With these two settings on you sometimes don't get any sound from your speakers!

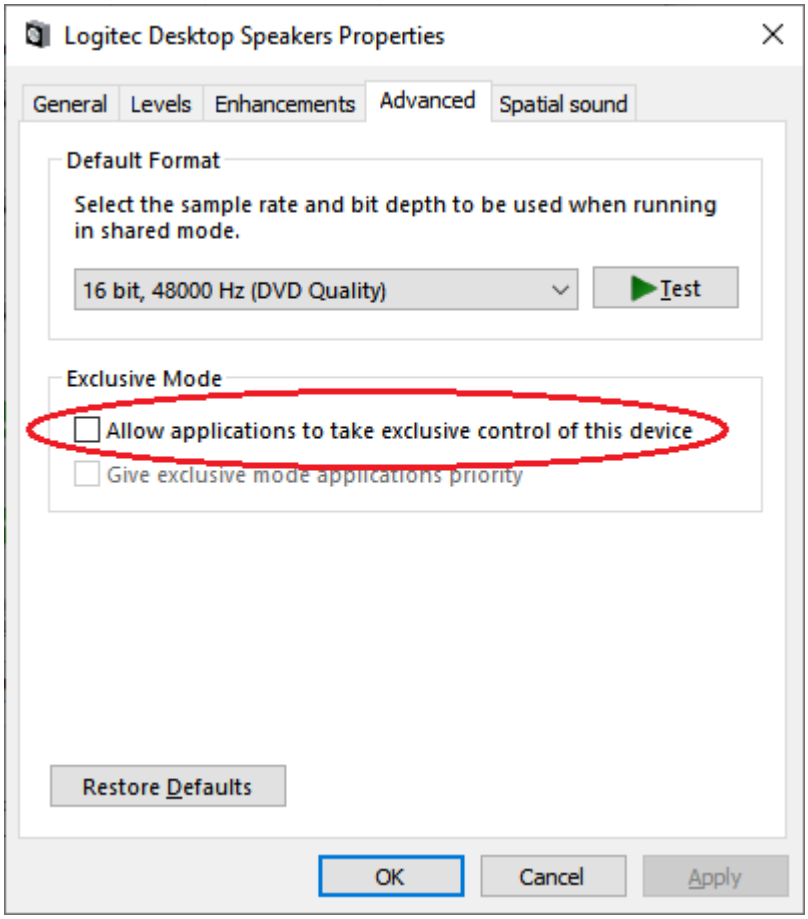




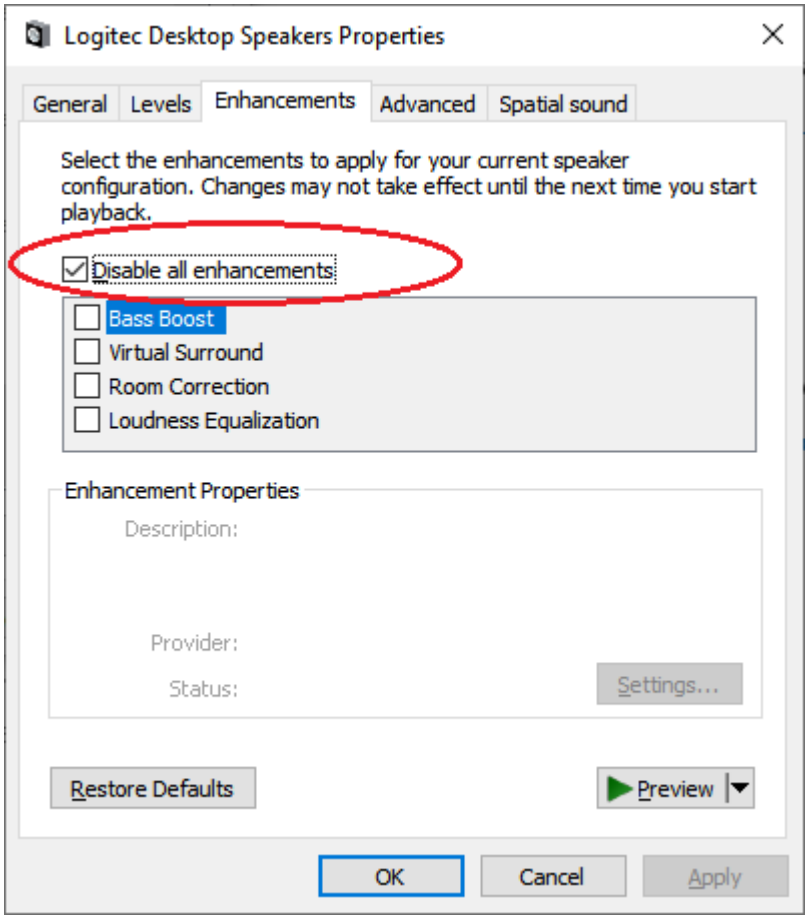
Select Sound → Related Settings → Sound Control Panel



Click **Properties** to make the necessary changes.



Ensure “Allow applications to take exclusive control” is clear.



Tick the “Disable all enhancements” if you don’t hear any sounds coming from your speakers.