CRASH
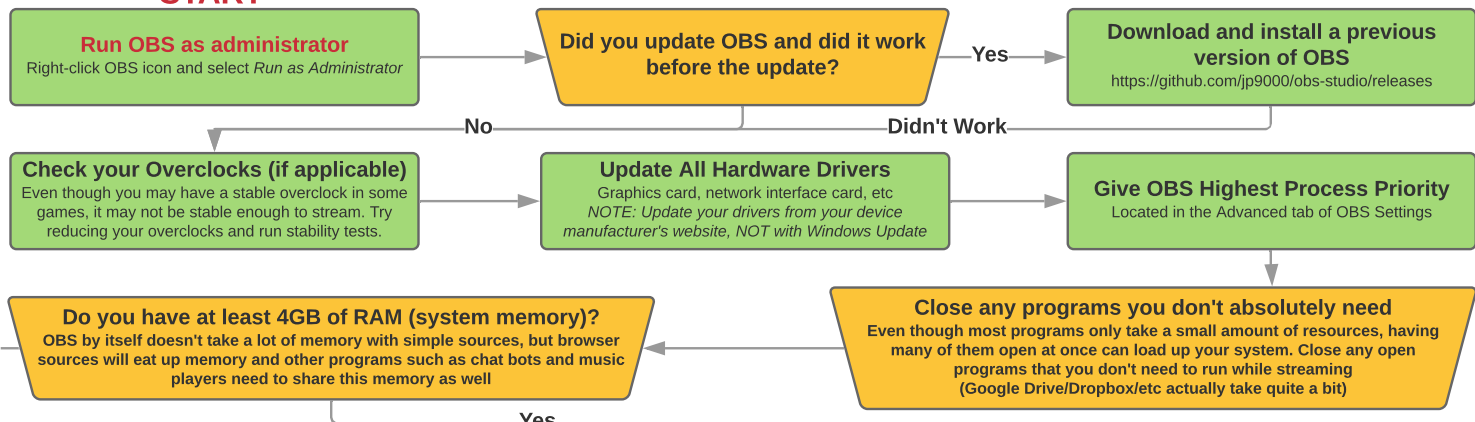CrashKoeck.com

OBS STREAM INSTABILITY TROUBLESHOOTING CHART

Version 1.8 | Modified 18.05.20

Do a Twitch Bandwidth Test for *at least* 5 minutes after completing an action in a green box to see if your issue has been resolved or if it has at least improved. Proceed until desired result achieved or until end of tree reached - you don't have to go to the next item if the last one you tried works. Run the bandwidth test as if it were a full stream.

Notes:
- Although this chart is designed with Twitch in mind, the only part that may be different with another service like YouTube or Mixer is the "Dropped Frames" section, in which case most of the techniques will still generally apply
- Although this chart is designed with OBS in mind, most of the settings are identical in Streamlabs OBS and OBS.Live. There is no status window in Streamlabs OBS, but there is an alert system that will inform you if you get a high amount of missed, skipped, or dropped frames
- This chart is designed with Windows 10 in mind. If you are using a different operating system, some features and options won't be available to you.
- Do not skip steps without first consulting Crash or someone with OBS. Skipping steps not only could waste your time, but could cause more issues
- There is still some general confusion about Windows 10 Game Mode with many streamers. Ever since Windows 10 version 1903, OBS has been whitelisted as a "game" and Windows will properly allocate resources to it. Step is noted below.
- It is STRONGLY recommended that if you're on a PC, run Windows 10. The newer versions of OBS are designed to take advantage of Windows 10 features.
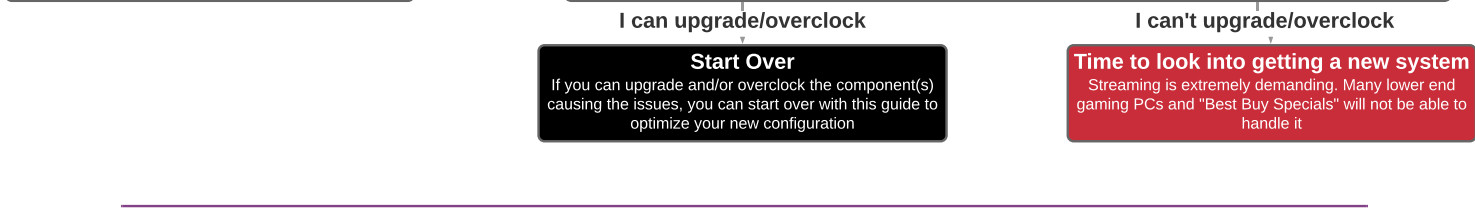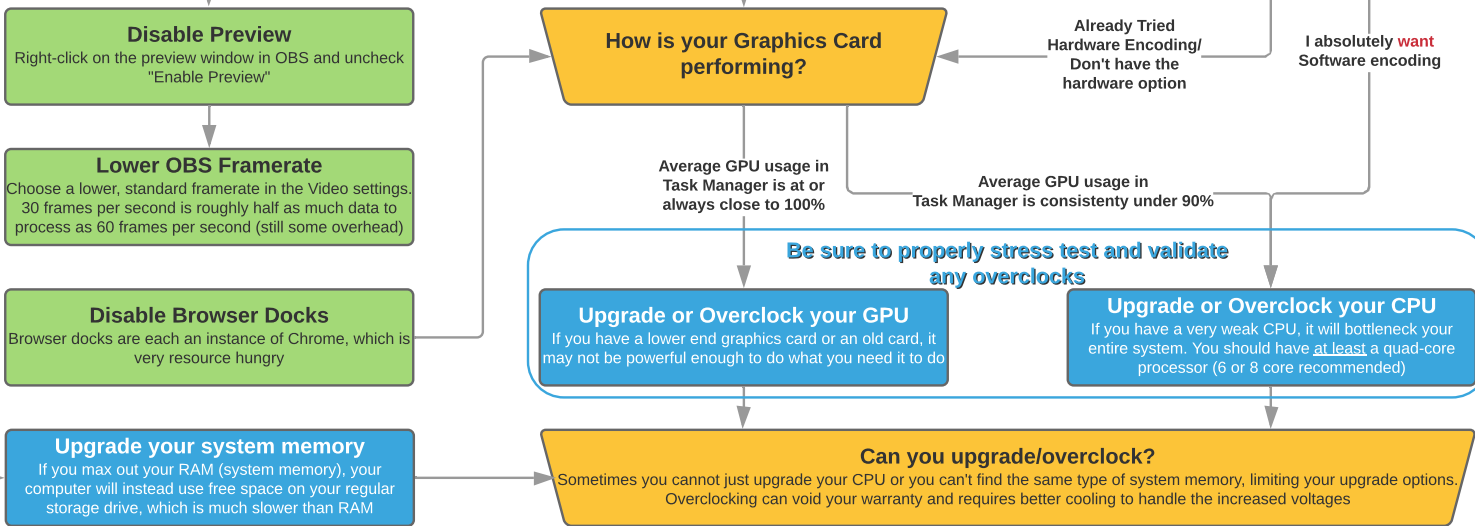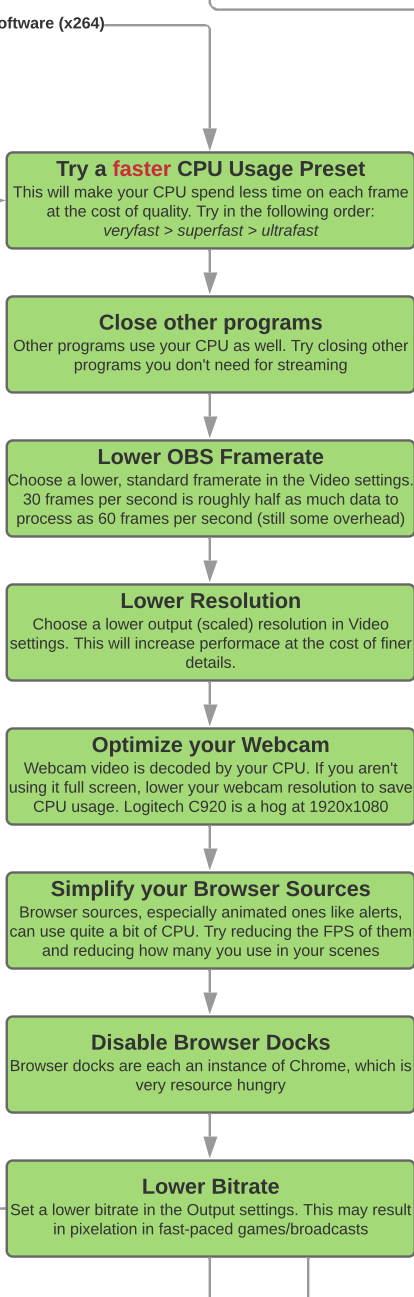
START

Run OBS as administrator
Right-click OBS icon and select *Run as Administrator*

→ **Did you update OBS and it work before the update?** — Yes → **Download and install a previous version of OBS**
https://github.com/jp9000/obs-studio/releases

No ↓   Didn't Work ↓

Check your Overclocks (if applicable)
Even though you may have a stable overclock in some games, it may not be stable enough to stream. Try reducing your overclocks and run stability tests.

→ **Update All Hardware Drivers**
Graphics card, network interface card, etc.
NOTE: Update drivers from your device manufacturer's website, NOT with Windows Update

→ **Give OBS Highest Process Priority**
Located in the Advanced tab of OBS Settings

Do you have at least 4GB of RAM (system memory)?
OBS by itself doesn't take a lot of memory with simple sources, but browser sources will eat up memory and other programs such as chat bots and music players need to share this memory as well

No → (Upgrade your system memory)   Yes ↓

Close any programs you don't absolutely need
Even though most programs take a small amount of resources, having many of them open at once can load up your system. Close any open programs that you don't need to run while streaming (Google Drive/Dropbox/etc actually take quite a bit)
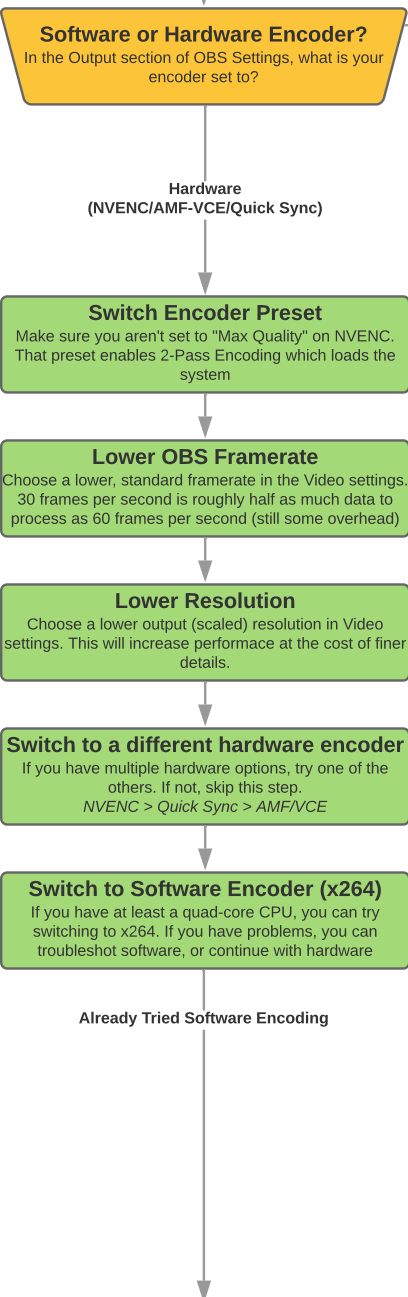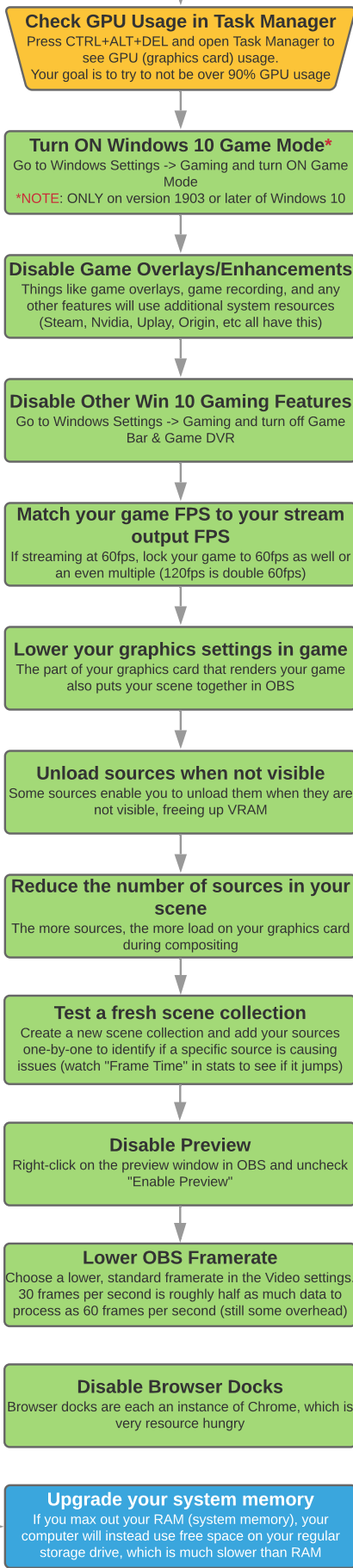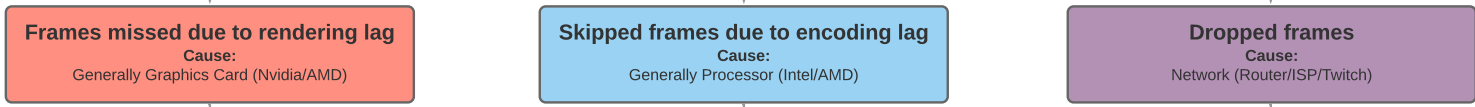
Set Output Mode to "Simple" in OBS Settings
Unless you are intentionally doing multi-track recording, are already familiar with FFMPEG custom settings, or know specifically what you need within "Advanced" mode, leave the Output Mode set to "Simple". As an example, a majority of the OBS devs use the "Simple" mode when they stream and even many of the most advanced streams out there leave it on "Simple" mode. Changing to "Advanced" mode when not needed often results in more issues arising.
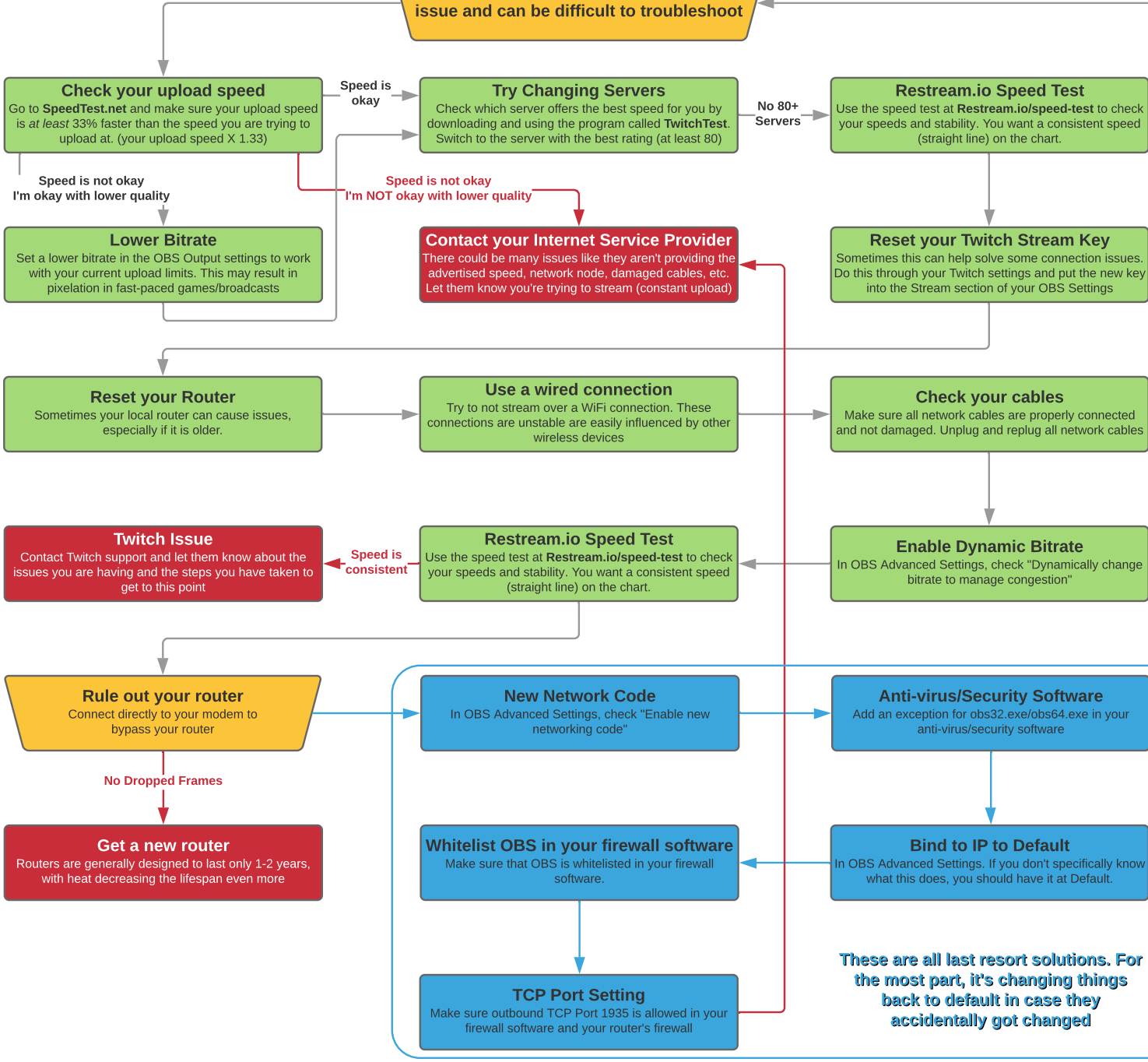
What is happening in the OBS Stats window?
Open the stats window from the View menu in the OBS taskbar and see what happens during a test stream. Almost every stream will have an occasional hiccup and it's not uncommon to have between 0% and 1% missed/skipped frames due to multiple alerts or animations and between 0% and 1% dropped frames now and then just because of other people using internet within your household or a small "blip" with your ISP.

If you have a combination of missed and skipped frames, start with solving for missed frames first as sometimes that can cause issues down the chain with encoding.

Frames missed due to rendering lag
Cause: Generally Graphics Card (Nvidia/AMD)

Skipped frames due to encoding lag
Cause: Generally Processor (Intel/AMD)

Dropped frames
Cause: Network (Router/ISP/Twitch)

Frames missed due to rendering lag branch:

Check GPU Usage in Task Manager
Press CTRL+ALT+DEL and open Task Manager to see GPU (graphics card) usage
Your goal is to try to not be over 90% GPU usage

Turn ON Windows 10 Game Mode*
Go to Windows Settings -> Gaming and turning on ON Game Mode
*NOTE: ONLY on version 1903 or later of Windows 10

Disable Game Overlays/Enhancements
Things like game overlays, game recording, and any other features will use additional system resources (Steam, Nvidia, Uplay, Origin, etc all have this)

Disable Other Win 10 Gaming Features
Go to Windows Settings -> Gaming and turn off Game Bar & Game DVR

Match your game FPS to your stream output FPS
If streaming at 60fps, lock your game to 60fps as well or even multiple (120fps is double 60fps)

Lower your graphics settings in game
The part of your graphics card that renders your game also puts your scene together in OBS

Unload sources when not visible
Some sources enable you to unload them when they are not visible, freeing up VRAM

Reduce the number of sources in your scene
The more sources, the more load on your graphics card during compositing

Test a fresh scene collection
Create a new scene collection and add your sources one-by-one to identify if a specific source is causing issues (watch "Frame Time" in stats to see if it jumps)

Disable Preview
Right-click the preview window in OBS and uncheck "Enable Preview"

Lower OBS Framerate
Choose a lower, standard framerate in the Video settings. 30 frames per second is roughly half as much data to process as 60 frames per second (still some overhead)

Disable Browser Docks
Browser docks are each an instance of Chrome, which is very resource hungry

→ **How is your Graphics Card performing?**

Skipped frames due to encoding lag branch:

Software or Hardware Encoder?
In the Output section of OBS Settings, what is your encoder set to?

— Software (x264) →
— Hardware (NVENC/AMF-VCE/Quick Sync) ↓

Switch Encoder Preset
Make sure you aren't set to "Max Quality" on NVENC. That preset enables 2-Pass Encoding which loads the system

Lower OBS Framerate
Choose a lower, standard framerate in the Video settings. 30 frames per second is roughly half as much data to process as 60 frames per second (still some overhead)

Lower Resolution
Choose a lower output (scaled) resolution in Video settings. This will increase performace at the cost of finer details.

Switch to a different hardware encoder
If you have multiple hardware options, try one of the others. For that, check out this step.
NVENC > Quick Sync > AMF/VCE

Switch to Software Encoder (x264)
If you have at least a quad-core CPU, you can try switching to x264. If you have problems, you can troubleshoot software, or continue with hardware

→ Already Tried Software Encoding

→ **How is your Graphics Card performing?**

Dropped frames branch:

Try a *faster* CPU Usage Preset
This will make your CPU speed less time on each frame at the cost of quality. Try in the following order:
veryfast > superfast > ultrafast

Close other programs
Other programs use your CPU as well. Try closing other programs you don't need for streaming

Lower OBS Framerate
Choose a lower, standard framerate in the Video settings. 30 frames per second is roughly half as much data to process as 60 frames per second (still some overhead)

Lower Resolution
Choose a lower output (scaled) resolution in Video settings. This will increase performace at the cost of finer details.

Optimize your Webcam
Webcam video is decoded by your CPU. If you aren't using it full screen, lower your webcam resolution to save CPU usage. Logitech C920 is a hog at 1920x1080

Simplify your Browser Sources
Browser sources, especially animated ones like alerts, can use quite a bit of CPU. Try reducing the FPS of them and reducing how many you use in your scenes

Disable Browser Docks
Browser docks are each an instance of Chrome, which is very resource hungry

Lower Bitrate
Set a lower bitrate in the Output settings. This may result in pixelation in fast-paced games/broadcasts

— Try Software Encoding
— Try Hardware Encoding

How is your Graphics Card performing?
— Already Tried Hardware Encoding/Don't want the hardware option
— I absolutely want Software encoding

- Average GPU usage in Task Manager is at or always close to 100%
- Average GPU usage in Task Manager is consistently under 90%

Be sure to properly stress test and validate any overclocks

Upgrade or Overclock your GPU
If you have a lower end graphics card or an old card, it may not be powerful enough to do what you need it to do

Upgrade or Overclock your CPU
If you have a very weak CPU, it will bottleneck your entire system. You should have at least a quad-core processor (6 or 8 core recommended)

Upgrade your system memory
If you max out your RAM (system memory), your computer will instead use free space on your regular storage drive, which is much slower than RAM

→ **Can you upgrade/overclock?**
Sometimes you cannot just upgrade your CPU or you can't find the same type of system memory, limiting your upgrade options. Overclocking can void your warranty and requires better cooling to handle the increased voltages

I can upgrade/overclock → **Start Over**
If you can upgrade and/or overclock the component(s) causing the issues, you can start over with this guide to optimize your new configuration

I can't upgrade/overclock → **Time to look into getting a new system**
Streaming is extremely demanding. Many lower end gaming PCs and "Best Buy Specials" will not be able to handle it

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Dropped Frames are a result of a network issue and can be difficult to troubleshoot

Check your upload speed
Go to SpeedTest.net and make sure your upload speed is *at least* 33% faster than the speed you are trying to upload at. (your upload speed X 1.33)

— Speed is okay →
— Speed is not okay / I'm okay with lower quality ↓
— Speed is not okay / I'm NOT okay with lower quality →

Try Changing Servers
Check which servers offers the best speed for you by downloading and using the program called TwitchTest. Switch to the server with the best rating (at least 80)

— No 80+ Servers →

Restream.io Speed Test
Use the speed test at Restream.io/speed-test to check your speeds and stability. You want a consistent speed (straight line) on the chart.

Lower Bitrate
Set a lower bitrate in the OBS Output settings to work with your current upload limits. This may result in pixelation in fast-paced games/broadcasts

Contact your Internet Service Provider
There could be many issues like they aren't providing the advertised speed, network node, damaged cables, etc. Let them know you're trying to stream (constant upload)

Reset your Twitch Stream Key
Sometimes this can help solve some connection issues. Do this through your Twitch settings and put the new key into the Stream section of your OBS Settings

Reset your Router
Sometimes your local router can cause issues, especially if it is older.

Use a wired connection
Try to not stream over a WiFi connection. These connections are unstable are easily influenced by other wireless devices

Check your cables
Make sure all network cables are properly connected and not damaged. Unplug and replug all network cables

Twitch Issue
Contact Twitch support and let them know about the issues you are having and the steps you have taken to get to this point

— Speed is consistent

Restream.io Speed Test
Use the speed test at Restream.io/speed-test to check your speeds and stability. You want a consistent speed (straight line) on the chart.

Enable Dynamic Bitrate
In OBS Advanced Settings, check "Dynamically change bitrate to manage congestion"

Rule out your router
Connect directly to your modem to bypass your router

— No Dropped Frames ↓

Get a new router
Routers are generally designed to last only 1-2 years, with heat decreasing the lifespan even more

New Network Code
In OBS Advanced Settings, check "Enable new networking code"

Anti-virus/Security Software
Add an exception for obs32.exe/obs64.exe in your anti-virus/security software

Whitelist OBS in your firewall software
Make sure that OBS is whitelisted in your firewall software.

Bind to IP to Default
In OBS Advanced Settings, if you don't specifically know what this does, you should have it at Default.

These are all last resort solutions. For the most part, it's changing things back to default in case they accidentally got changed

TCP Port Setting
Make sure outbound TCP Port 1935 is allowed in your firewall software and your router's firewall

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Find a mistake? Did I miss something? Contact me on Twitter @CrashKoeck and I'll update this sheet