[Game Master] Game Performance Optimization & Troubleshooting for AMD Graphics Notebooks

This document supplies you with useful solutions if you're encountering the problems below in games. Please follow the instruction for troubleshooting.

- Low performance, FPS drop, stutter
- Timeout Detection and Recovery (TDR), Blue Screen of Death (BSoD)
- Game/System freeze, crash
- Flicker, black screen, garbage screen, or other graphics artifacts
- Audio problem, like sound stutter/delay, distorted sound, or microphone related
- Connection problem, like ping spikes

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1. Before Starting

If your game doesn’t work properly on the notebook, there are several possible reasons why. Before starting the troubleshooting, please check the notebook's hardware configuration is the same with original, your notebook meets or exceeds the system requirements, you have the proper system environment, and the notebook's performance is normal.

Besides, please keep your game updated to prevent the problem from out-of-date or corrupted files.

1.1. Check if the hardware configuration is the same as the original

If you upgraded the memory or SSD, we suggest you return to the original condition since the notebook was shipped without a problem, and we should check if your problem exists with the condition.

Unplug any non-required external devices

You may have other devices plugged into your notebook (such as a webcam, external hard drive, or USB drives like gaming mouse or keyboard). Some device driver or their software might conflict with your system. MSI suggests you remove these external devices for troubleshooting.

1.2. Check the system requirements of the game

To play a game without problems, all game needs certain hardware components or other software resources to be present on a computer. These prerequisites are known as system requirements and are often used as a guideline. The most game defines two sets of system requirements: **minimum and recommended**. With the increasing demand for higher processing power and resources in newer versions of the game, system requirements tend to increase over time.

Make sure your notebook meets the game's recommended system requirements. In addition, if your notebook has a single-channel memory configuration, it is recommended that you upgrade to a dual-channel memory configuration, which will greatly improve game performance.

1.3. Check the system environment

The system environment includes the BIOS/EC firmware, Windows Update, and the proper driver and utility. Please check your system environment by following the instruction below.

➢ BIOS and EC firmware

Since the new BIOS and EC firmware fix some potential issues and improve the system stability, MSI suggests you try to update the latest BIOS and EC firmware from the download webpage of your notebook.

- FAQ [How To] BIOS, EC Update and EC Reset

➢ Windows Update

After applying the latest Windows Update (e.g. Windows 10 Anniversary/Redstone 1 Update "build 14393"), some device functions or software might not work properly. MSI suggests you keep running Windows Update to download the important or critical hotfix.

- FAQ [How To] Get and Install the Latest Windows 10 Build
- Tutorial MSI® HOW-TO get the latest Windows Update

➢ Install the proper driver and utility

MSI suggests you install the latest MSI approved driver and utility from the MSI website. It helps you to get the most stable system environment.

- AMD graphics driver
  MSI suggests you try the graphics driver on MSI website. We don't recommend you try the generic graphics driver on AMD website since the generic version would have performance or stability issues
- Realtek audio driver and audio effect software (Nahimic)
- Network driver (LAN/Wireless LAN)
- MSI Dragon Center/Creator Center (UWP)

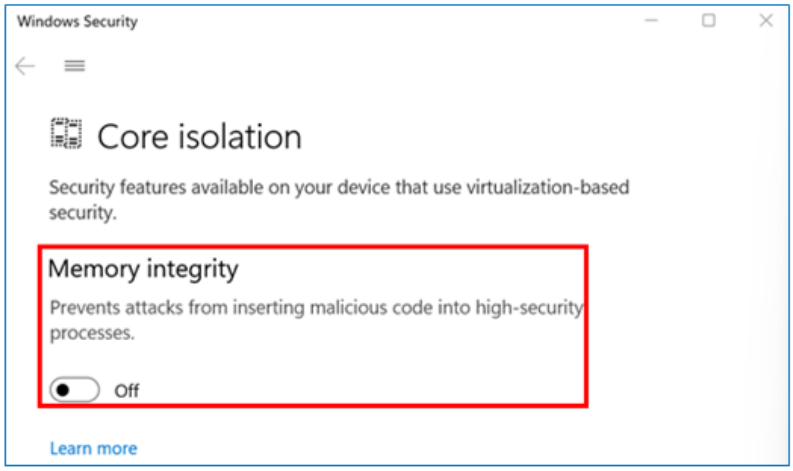
- FAQ [How To] Clean Install AMD Graphic Driver and Radeon Software
- Tutorial
  - Install driver by using Live Update in MSI Dragon Center/Creator Center
  - MSI® HOW TO clean Install AMD Graphic Driver and Radeon Software

- Security features

  Memory integrity and VBS improve security and protect the operating system from malicious attacks. However, enabling the features might affect the gaming or benchmark performance.

  Please refer to the steps below to disable Memory integrity (VBS included) to optimize the system's performance.

  a. Press the Windows key and type "**Core isolation**" and open
  b. Set Memory integrity as "**off**"
  c. Click "**Yes**" to allow the change to laptop
  d. Restart the system to take effect the change

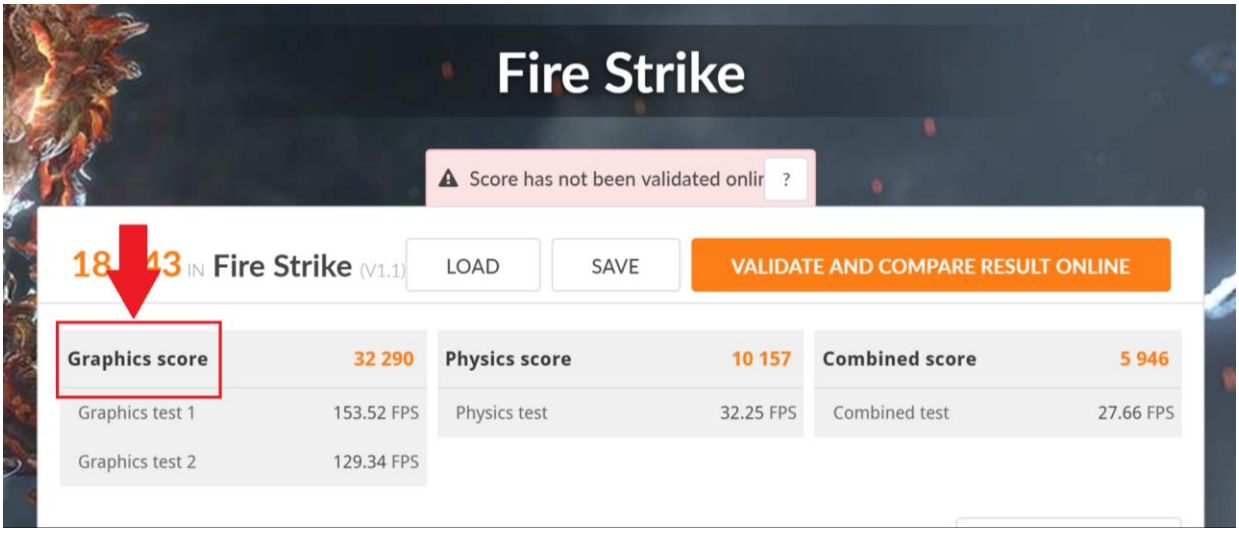


1.4. Check notebook performance

If the graphics score in 3DMARK Fire Strike and the FPS in other games are normal, please refer to the Basic Troubleshooting for more information.

A. Perform the 3DMARK Fire Strike benchmark.
   Download 3DMARK Basic Edition (FREE) from the Futuremark website.
B. Compare the graphics score below.

Graphics	**RX 5500M**
Graphics Score	122XX



- Some players may have wrong expectations about the performance of the graphics card of the laptop. For example, the in-game effects are fully enabled and there is also get a high FPS.
- If the performance in the game is not good, it is recommended to run 3DMark to confirm the score of the graphics card.

1.5. Update the game

Some FPS drop or low-performance problem might relate to the game patch is installed incorrectly, MSI suggest you remove and install the game

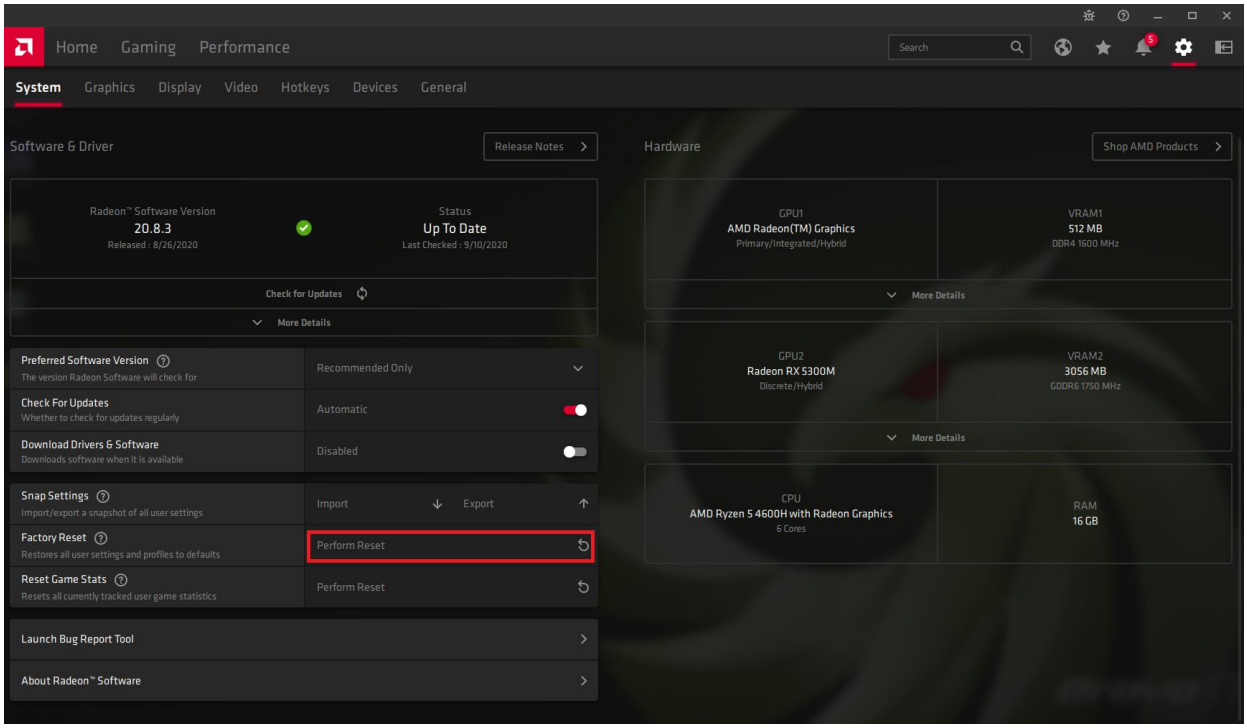
Reinstalling from the most recent version of the setup files ensures that any problems you experience with the game are not caused by out-of-date or corrupted files.

2. Basic Troubleshooting

2.1. Graphics card setting

- Restore AMD graphics setting

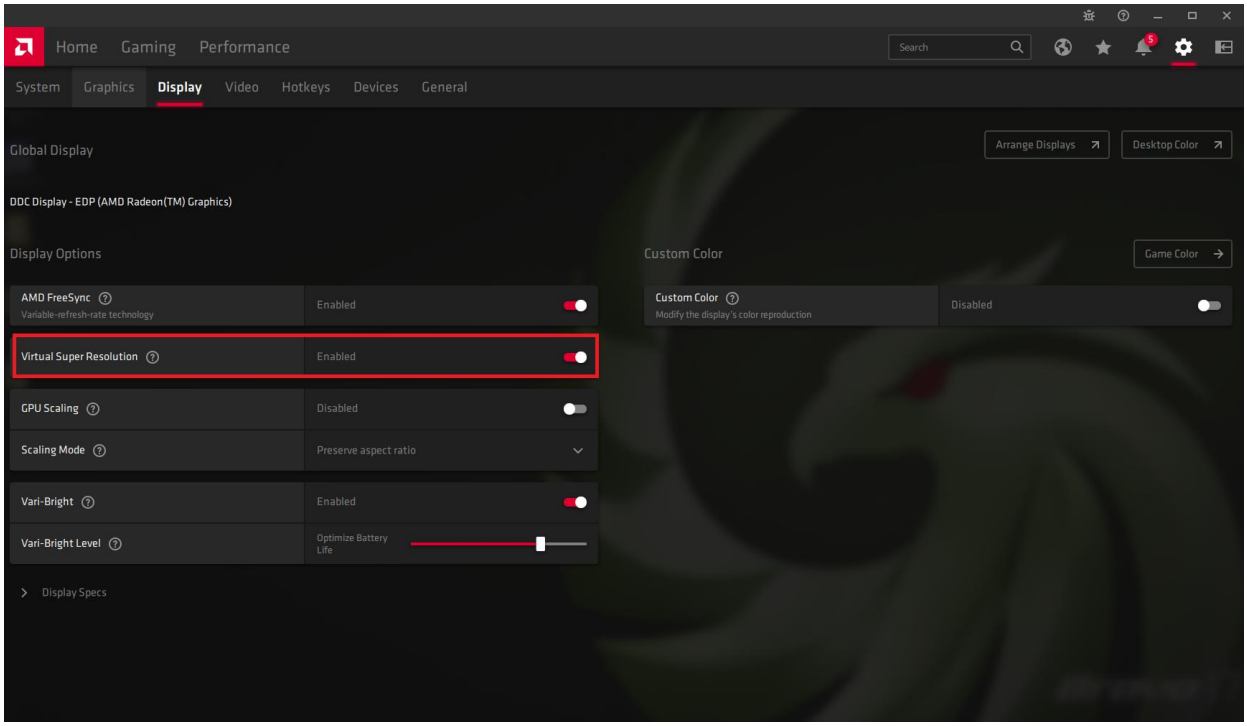
  Click on “Perform Reset” to restore display related settings, and check whether the application or game controls the settings. This step avoids unstable performance caused by interfered settings.



➢ AMD VSR (Virtual Super Resolution)

If the user enable “Virtual Super Resolution” in AMD Radeon software, it will affect the game performance and cause low fps. MSI suggests you disable this item manually in the AMD Radeon software.

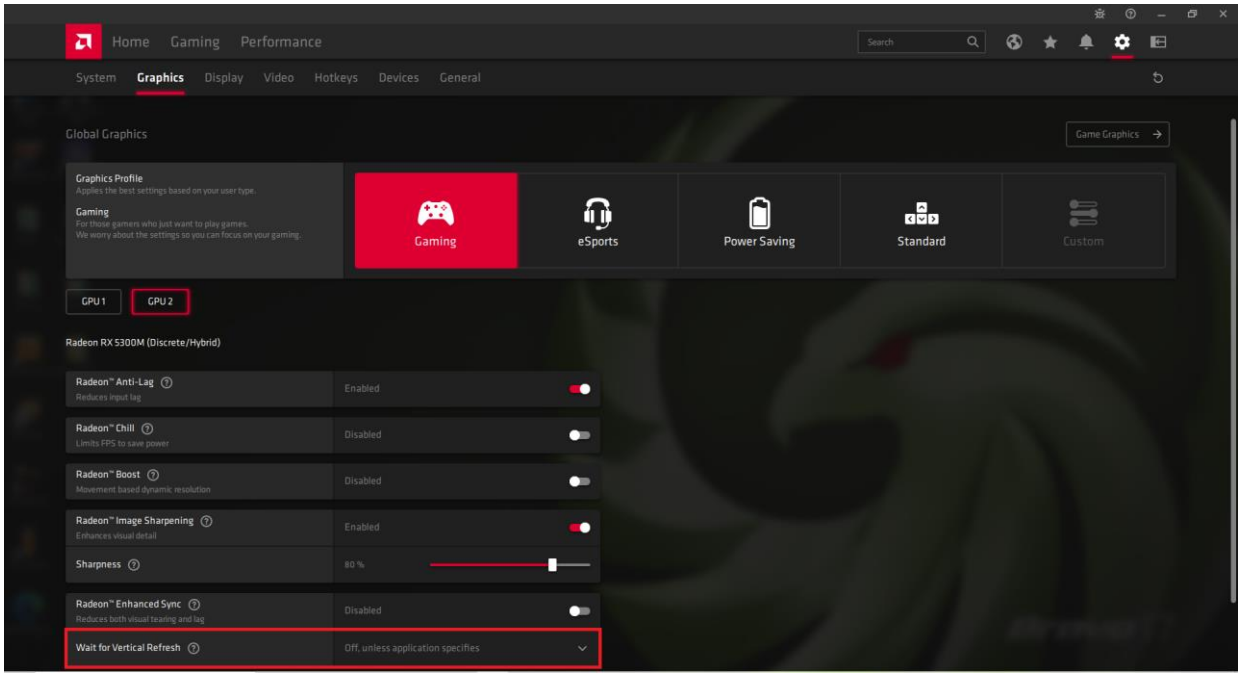
Besides, the in-game setting “Resolution” might be enabled by VSR and override the native resolution of the internal panel. MSI suggests you disable VSR and adjust the resolution back to native resolution.



- AMD Wait for Vertical Refresh

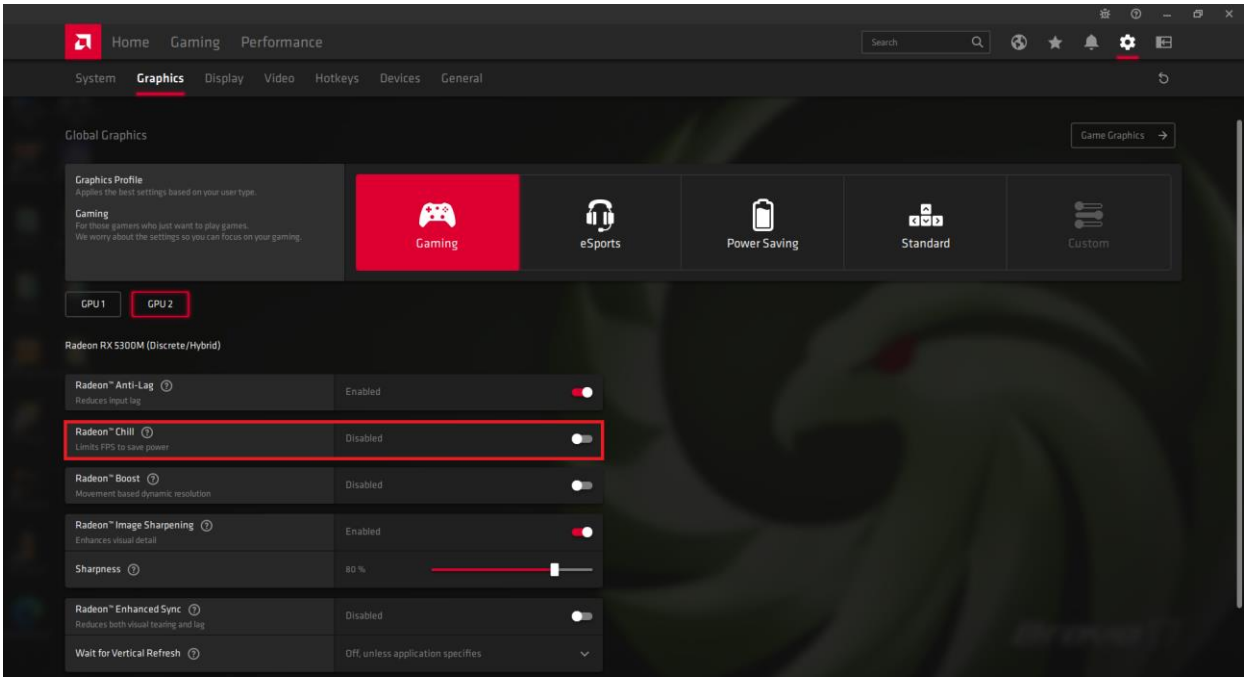
  Wait for Vertical Refresh matches the frame rate to screen refresh rate, and usually, the screen refresh rate is 60 Hz. If you enable Wait for Vertical Refresh, it can increase image stability but it will keep 60 FPS and then you might feel low performance; if you disable Wait for Vertical Refresh, FPS will be not limited but you might encounter screen tears.
  (Adjust this item based on your FPS)

  You can adjust the Wait for Vertical Refresh function in the AMD Radeon software or in-game settings.



- Radeon Chill

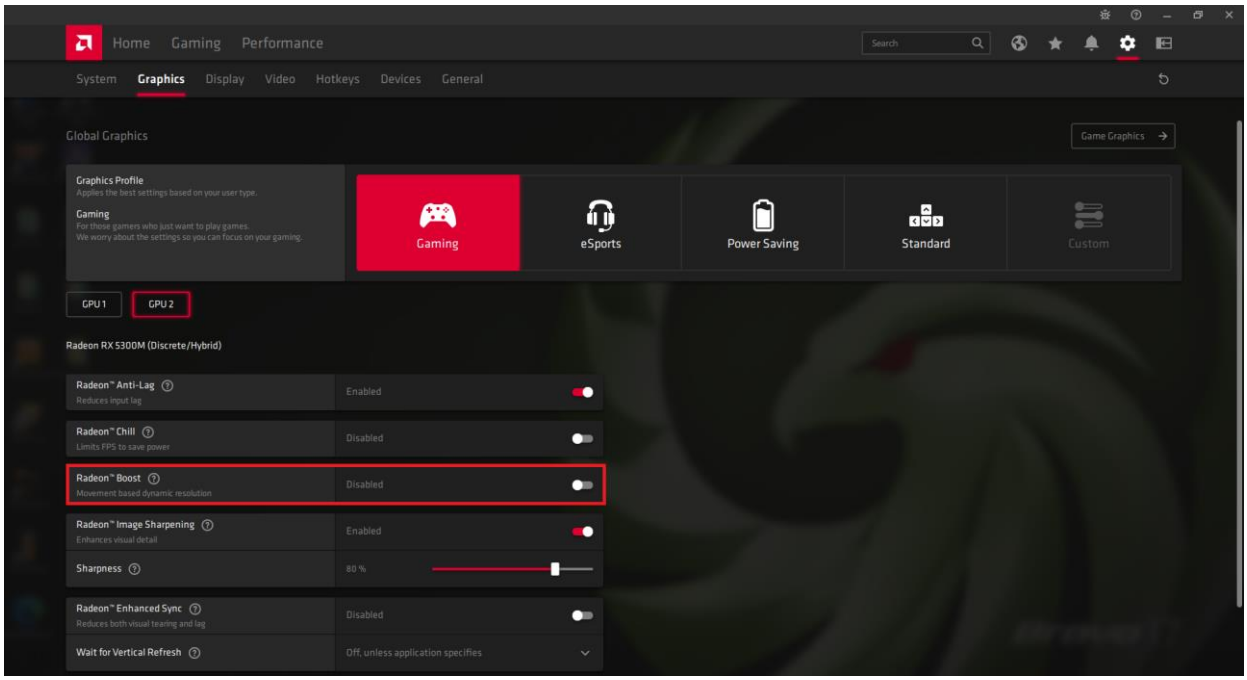
  Radeon Chill is a setting provided by AMD for performance control. Players can adjust the minimum and maximum fps performance of the game. By limiting the fps output, the graphics card can save power and reduce temperature.
  If you want to get the best FPS, we recommend that you disable the Radeon Chill.



- Radeon Boost

  Provides performance slightly higher than required when fast on-screen character actions are detected through mouse input.

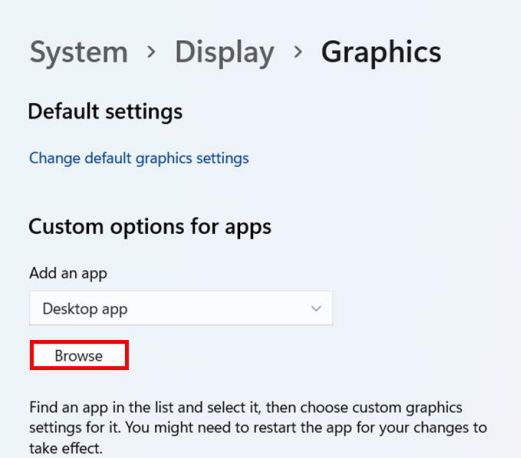
  Radeon Boost dynamically reduces the resolution of the entire screen, allowing higher FPS.



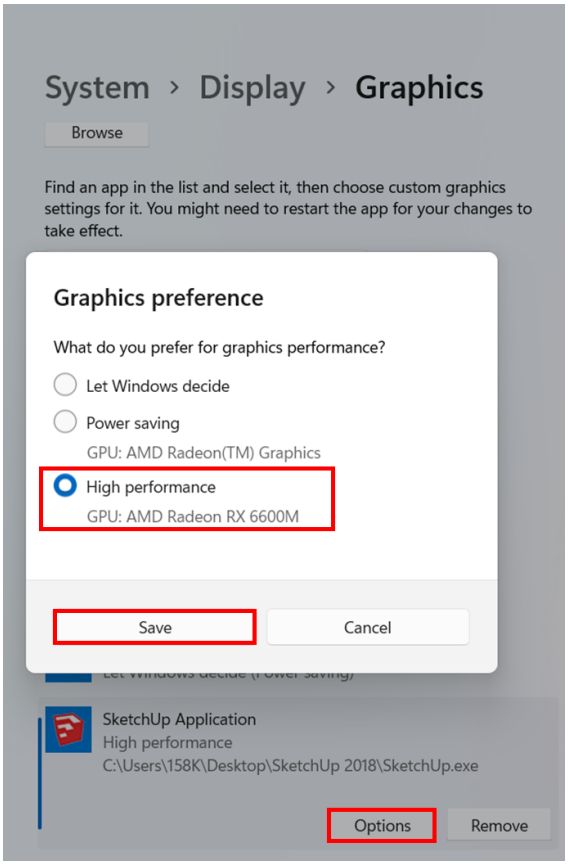
➢ Assigning Switchable Graphics Mode for Games

For games that have not been fully optimized might be running using integrated graphics by default and the game performance will be affected, follow the instructions below to manually apply selected games running with the dedicated graphics.

1. Type “Graphics Settings” under the Windows search box and launch.
2. Select “Browse” to search the game/application executable file under the Desktop app.



3. Click “Options”, and set the Graphics specifications as “High performance”, then click “Save” to apply the change.



- Other display settings

  AMD FreeSync, Radeon Anti-lag, Radeon Image Sharpening, Anisotropic Flitering, Texture Flitering Quality, Surface Format Optimization, Morphological Anti-Aliasing and Tessellation Mode could cause negative effects to FPS or display stability.

2.2. Streaming service

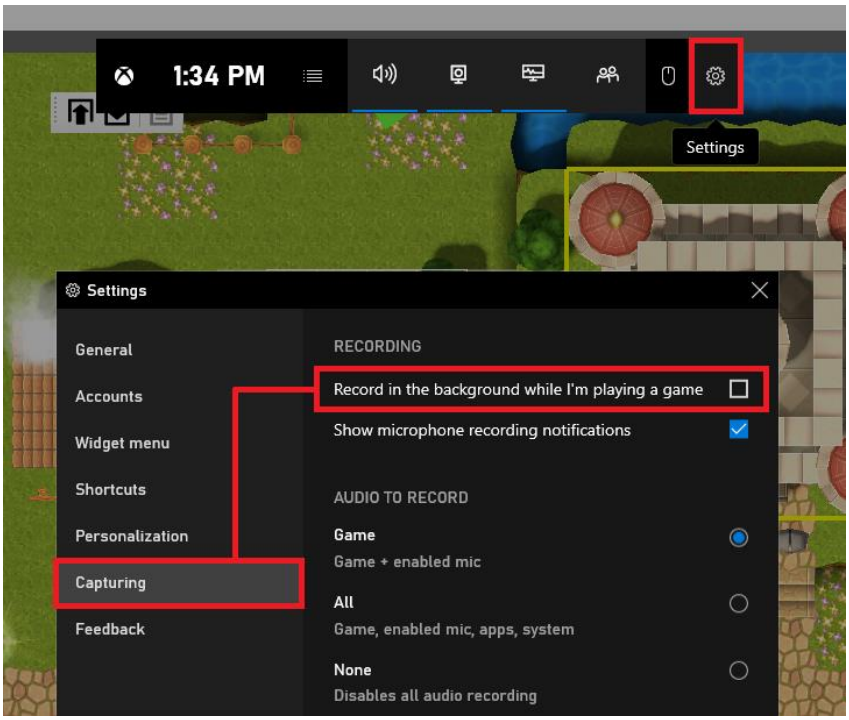
Streaming service would put additional CPU loading in the background and cause low performance, FPS drop, audio stutter, or sound delay in games. Please refer to the troubleshooting below to check the

- Windows background recording (Xbox Game DVR)

  Since Windows 10 Anniversary Update, it auto-enabled Microsoft built-in recording function. While the feature is useful if you plan on sharing clips quite regularly, it could be causing some major stutter (Refer to the Microsoft webpage or DOTA2 forum).

  MSI suggests you disable the background recording by the methods below. (It's also recommended by Steam & Blizzard to improve FPS in games)

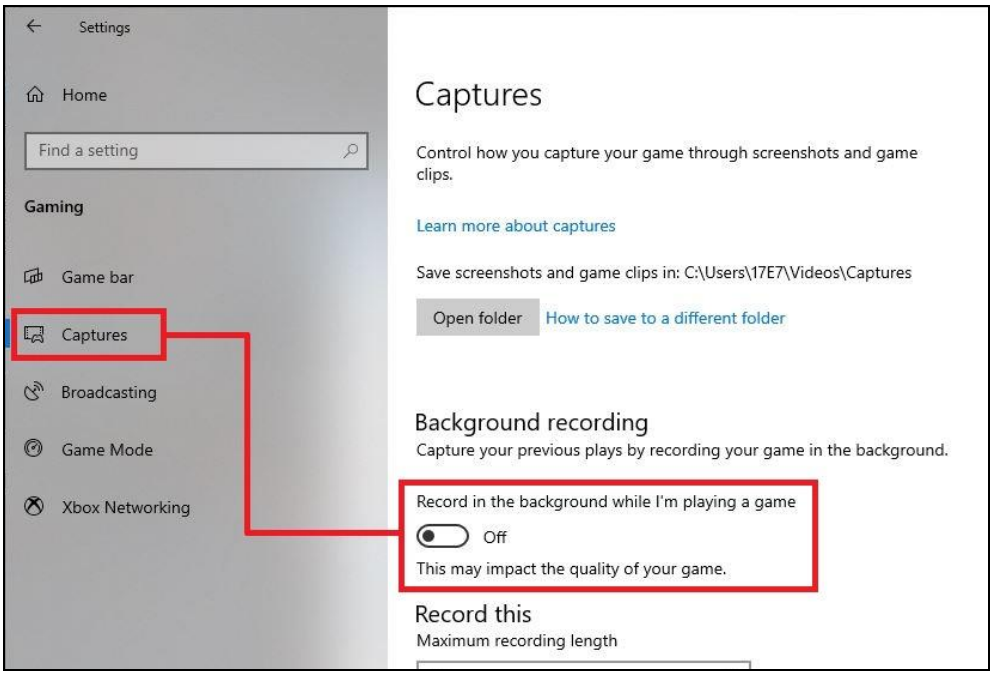
  - Turn off background recording in a game
    a. Run a game
    b. Press the "Windows logo" + "G" key to open the game bar
    c. Select "Settings"
    d. In the "Capturing" tab, uncheck the "Record in the background while I'm playing a game" checkbox.



- Access the location below

  Start > Settings > Gaming > Captures > turn off **Record in the background while I'm playing a game**

  *There is no automatic background recording option in Windows 11.



- Blizzard Battle.net streaming

  Please refer to the steps below to turn off Battle.net streaming for Blizzard games

  a. Click on the Battle.net application icon to open it
  b. Select “Settings”
  c. Click the “Streaming” icon on the left side of the Battle.net Settings window
  d. Uncheck “Enable Streaming” to turn off the streaming feature.

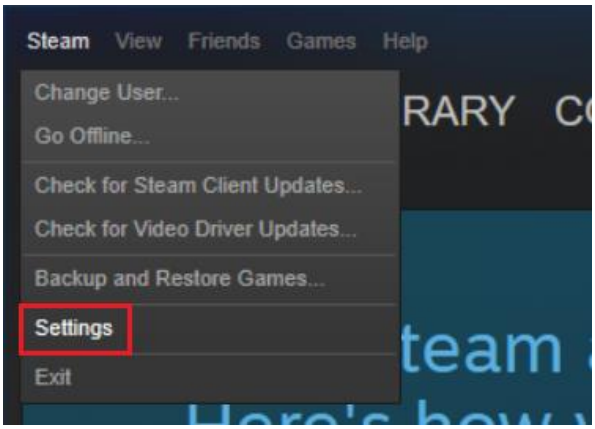
  (Blizzard has removed “Streaming” in the current version)

- Steam overlay and streaming

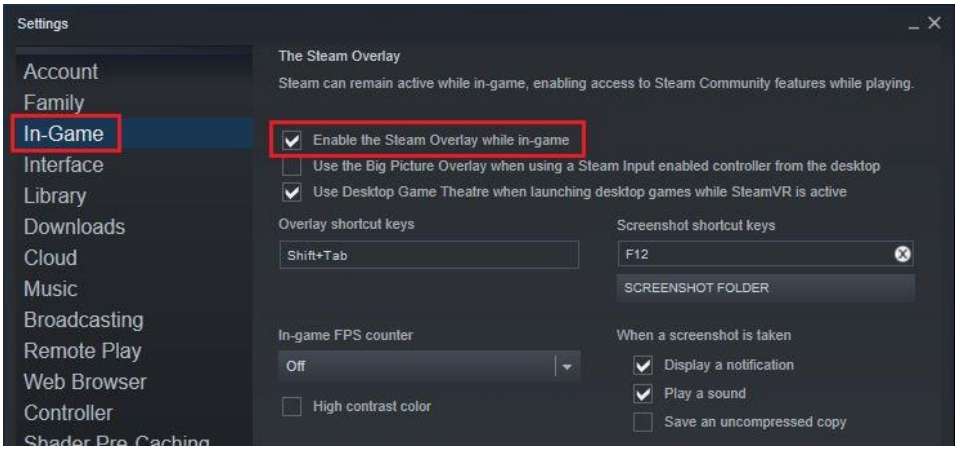
  The Steam overlay allows the user to surf the web and message friends while in-game, but can also cause performance issues with some games.

  Please refer to the steps below to turn off Steam overlay and streaming for Steam games.

  a. Click on the Steam application icon to open it
  b. Select “Settings”



  c. Click the “In-Game” icon on the left side of the Steam Settings window
  d. Uncheck “Enable the Steam Overlay while in-game” to turn off the Steam Overlay.



e. Click the “In-Home Streaming” icon on the left side of the Steam Settings window
f. Uncheck “Enable streaming” to turn off the streaming.
(Steam has removed “In-Home Streaming” in the current version)

2.3. Reinstall operation system and driver

Many reasons are causing low performance or freezing, and you cannot be able to find the root cause even if you try to troubleshoot one by one.
MSI suggests you reinstall the Windows and check the problem if you have tried to reinstall the game and graphics driver but the problem still exists.

Kindly follow the instructions below to reinstall the operation system and driver, and then you will have a clean system environment.

- **Notebook with Pre-installed system：**

  a. Use the F3 recovery function or the recovery media created by BurnRecovery to restore the system to the factory setting.
  (FAQ) How to use F3 Recovery on MSI Windows 10 preloaded system?
  (FAQ) How to use MSI BurnRecovery on Windows 10 preloaded system?
  b. After the system restore has been completed, kindly perform Windows Update and make sure the latest Windows 10 update is installed if the system is Windows 10.
  c. Reinstall the game.
  d. After the steps above have finished, kindly do not install any third-party software (such as anti-virus software, game plugins, or system optimized tool) and check whether the performance is normal in this environment.

- **Notebook with Free DOS：**

  a. Install the original or MSDN version of Windows operation system.
  [How To] Get and Install the Latest Windows 10 Build
  MSI® HOW-TO clean install pure OS
  b. After the system installing finished, download and install MSI approve driver and utility from the MSI website or the “ONE TOUCH INSTALL” came with your notebook.
  MSI® HOW-TO use ONE TOUCH INSTALL to install driver if the notebook doesn't have a pre-installed system

c. Kindly perform Windows Update and make sure the latest Windows 10 update is installed.
d. Reinstall the game.
e. After the steps above have finished, kindly do not install any third-party software (such as anti-virus software, 3rd-party game plugins, or system optimized tool) and check whether the performance is normal in this environment.

2.4. Connection problem

A connection issue affects the connection between your system and the game server. It might cause lag, ping spike, or screen delay during champion select, at the login screen, or even during the gameplay. Below you can find a list of common symptoms that are associated with connection issues and a useful wireless troubleshooting guide.

- Current server status

  Before performing any troubleshooting steps, it's worth checking the current status of the game server that you are trying to connect to.
  (Find out the server status on the game official website)

- Switching to a wired connection

  Wireless connections tend to be difficult to troubleshoot due to potential interference from the environment and other radio signals. This often causes lag spikes and/or packet loss in the game. To eliminate this factor from your troubleshooting, we recommend switching to a wired (Ethernet) connection whenever it is possible.

  If you have only wireless connection, please refer to the FAQ below to troubleshoot wireless connection problems.
  [Troubleshooting] Wireless connection problem (wireless signal can't be detected, connection lost, unstable or stop working)