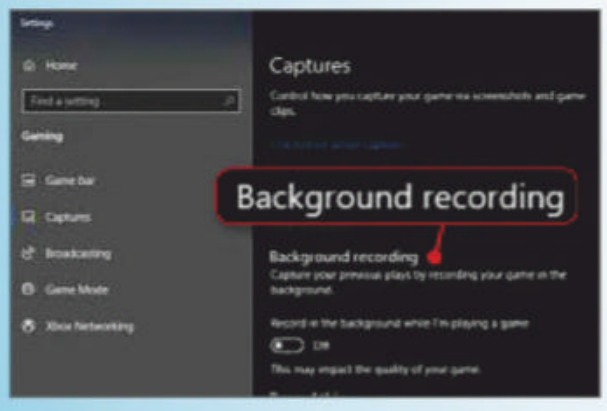
Optimise Windows 10 for gaming



Want to play the latest games on your PC, without buying an expensive graphics card or extra memory? **Steve Clark** explains how to tweak Windows settings for ultimate gaming performance

Adjust Windows game mode

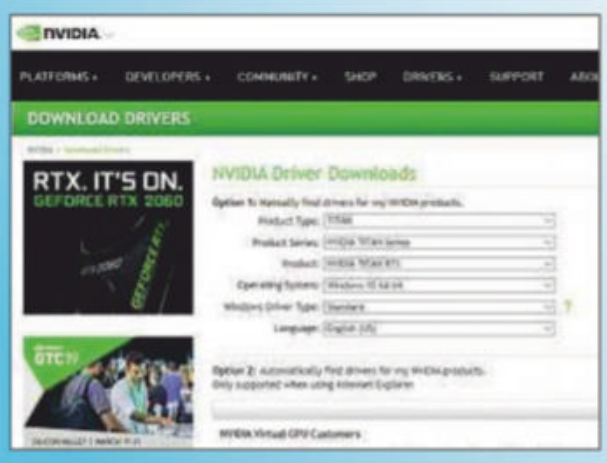
To start your Windows 10 gaming boost, head to Settings, Game Mode – or just search for 'game mode' in the Start bar. The 'Background recording' setting on the Game DVR tab uses part of your computer's processing power to record every second of action in your game. Unless you're running an ultra-fast rig, it's best to turn this setting off to improve performance and avoid lag. The other settings here shouldn't affect performance.



Microsoft calls Windows 10 'the best platform for PC gaming'

Update your graphics drivers

Keeping your graphics processor (GPU) drivers up to date is critical to ensure Windows makes full use of your graphics card (because nothing's worse than FPS drops). These drivers often receive regular updates, with each new iteration improving video performance. To check which graphics card you have, right-click the Windows icon, open Device Manager, then press Display Adapters. Next, go to the manufacturer's support site and install the drivers you need – the most popular being Nvidia (bit.ly/nvidia470) and AMD (bit.ly/amddriver470).



Have you checked whether your drivers are up to date?

Overclock your GPU

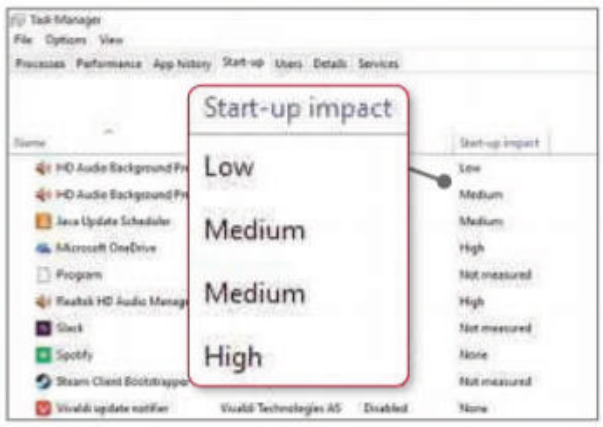
If you want to squeeze every last bit of juice from your PC, try overclocking your GPU. However, be aware that although it's not super-dangerous, overclocking can invalidate your warranty or even 'brick' your machine, because you're pushing hardware beyond its recommended rating. Since the graphics card is working overtime, overclocking makes your computer hot – so thoroughly clean out the inside and ensure the heat is being properly dispersed, otherwise it may shut down or burn out. Now install the free tool MSI AfterBurner (bit.ly/msiab470), which also lets you use your Android phone to overclock your PC. Alternatively, check your GPU manufacturer's site to see if it offers its own overclocking software.



Overclock your graphics card to give your PC a boost but be careful to keep it cool

Sort out your startup programs

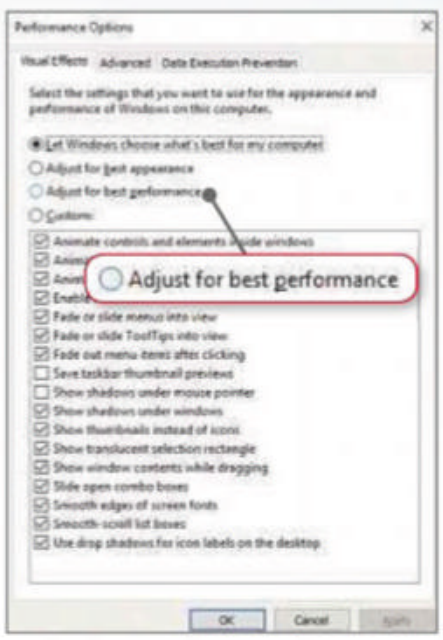
The art of optimising your PC for gaming is to kill any unnecessary processes, so your computer can focus on performance. To this end, it's essential to control which programs start when Windows boots up. Open Task Manager – either by searching the Start menu, right-clicking the taskbar or pressing Ctrl+Alt+Del – and click the Start-up tab. Highlight all but the most important tasks (even those listed as having a low impact), then click Disable on each one.



Limit which programs run when you boot up your PC

Turn off visual effects

Visual effects can be a major drag on your PC – they may look nice but they're mostly useless when gaming, so turn them off. Press Windows+i and search for `performance`. Select 'Adjust the appearance and performance of Windows'. By default, Windows

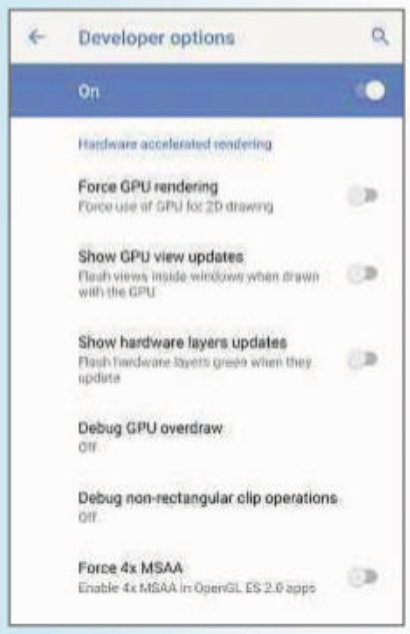


Keep your visual effects to an absolute minimum

manages the optimal settings for basic use, so tick the box 'Adjust for best performance', which switches off all visual effects. Apply the setting and click OK.

OPTIMISE YOUR PHONE FOR GAMING

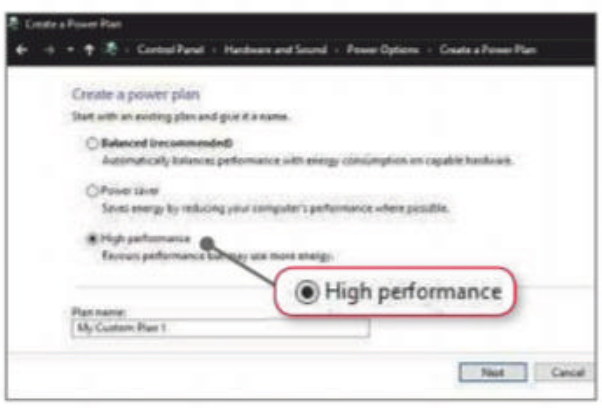
There's a secret way to force certain Android games – those based on OpenGL 2.0 – to run at optimum quality on your phone or tablet. Go to Settings, System, About and locate your 'Build number'. Tap it multiple times until you see a notification: 'You are now a developer'. Go back to System and tap into a new section: 'Developer options'. Scroll down to 'Hardware accelerated rendering' and enable the option Force 4x MSAA. This turns on multi-sample anti-aliasing, which optimises the way games and apps are rendered. It can be a battery drain, though, so charge your phone or plug it in to play.



Use the secret developer options to boost your smartphone gaming sessions

Tweak your power plan

Some gamers swear that a computer's power plan affects your gaming experience while others reckon it doesn't make a jot of difference, but if you want to err on the side of caution, search the Start menu for `power` and look for 'Additional power settings'. You can tweak existing settings, but it's better to 'Create a power plan' – the option is on the left-hand side – and select 'High performance'. If you're playing on a laptop, keep it plugged in, because running on battery won't yield the best results for intensive gaming.



Squeeze maximum performance from your machine by tweaking power settings

Disable Nagle's algorithm

Nagle's algorithm is a clever way of reducing network congestion, but its effect can be keenly felt when it causes games to lag. To stop this, find out your IP address by opening Command Prompt and typing `ipconfig`, making a note of your IPv4 address. Next, open the Registry Editor, then navigate to:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Interfaces

Click through the folders until you find the one that contains a 'DhcpIPAddress' that matches your IP address. Right-click this folder and select New, 'DWORD (32-bit value)'. Name your first `TcpAckFrequency`, then create a second called `TCPNoDelay`. Set both values to 1. This should disable Nagle's algorithm.

To switch it back on, change each value to 0.

Stop automatic updates

Automatic updates may be useful, but they have a habit of slowing down gaming sessions or stopping them altogether. You can temporarily switch off Windows auto-updates by typing `update options` in the Start bar and clicking 'Advanced options'. Under 'Update options', toggle off 'Automatically download updates'. Beneath this is the option to 'Show a notification when your PC requires a restart to finish updating'. Turn this on to avoid any nasty, unscheduled mid-game restarts.

Now head over to Steam, if you use that platform, and click the Steam button in the top-left corner. Select Settings, Downloads, then tick the box marked 'Only update games between' and choose the best times (ideally, when the computer's on, but you're not playing). Also, untick 'Allow downloads during gameplay'.

Should a game update cause a problem, right-click the offending game in Steam, select Properties and go to the Betas tab. If the developers support betas, use the drop-down menu 'Choose which betas you'd like to opt into' to roll back the game to a previous version.

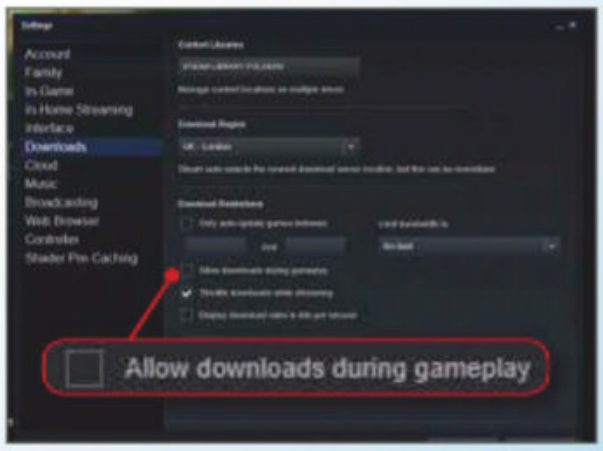
Other platforms, such as EA Origins, have similar options in the Application Settings menu.

Check you're running DirectX 12

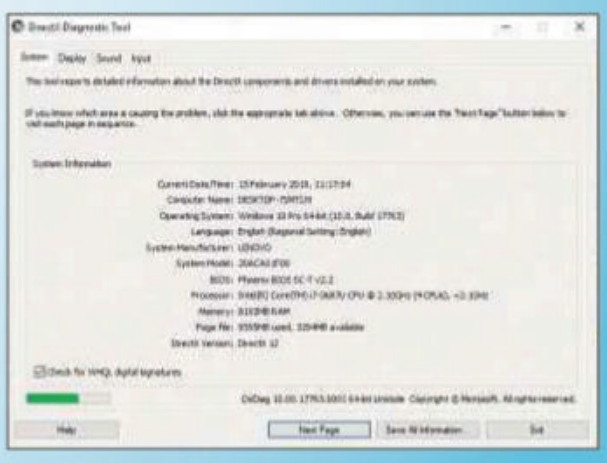
DirectX 12 is a Microsoft technology that makes games run faster and more smoothly. Your computer may already have it – check by pressing Windows+r and typing `dxdiag` in the Run box. This brings up the DirectX Diagnostic Tool, which displays your current version of DirectX. If you haven't got the latest version, you can get it by installing Microsoft's DirectX End-User Runtime Web Installer (bit.ly/directx470). ■



Changing the Nagle's algorithm setting in the Registry can prevent lag



If unexpected updates have ever caught you by surprise, tweak these settings



Most modern games use DirectX 12 to run faster and smoother