Hack Your SMART TV

TVs have never been more advanced, but there are ways to make them perform even smarter tasks. **Robert Irvine** and **Wayne Williams** reveal expert tricks for getting the most out of that clever box in the corner of your living room

WHAT YOU CAN DO

- Add new apps to your TV by sideloading them
- Remove unwanted apps from Samsung TVs
- Mirror your phone or tablet's screen on your TV
- Stream files from your PC to your smart TV
- Listen to TV wirelessly through Bluetooth headphones
- Control your TV using your voice
- Stop your TV collecting data about what you watch

Just as colour televisions superseded black-and-white sets, smart TVs have become the most popular means of watching telly at home, and around 65 per cent of us now own one (see www.snipca.com/39413). That figure should rise even further now that Amazon has announced plans to make them (www.snipca.com/39419). The days of missing your favourite programmes or complaining that there's "never anything good on" are long gone.

With so many great streaming services and apps to choose from, smart TVs provide such a constant flow of entertainment you might wonder how there could possibly be even more to them. But as we'll explain over the next few pages, it's likely you've barely scratched the surface of your smart TV, and all the clever things it can do.

While many smart TV owners simply stick with the apps provided on their home screens, we'll explain how to become a 'power viewer' by installing any app you want. We'll also reveal how to add superb new features to your set, which aren't mentioned in any manual, and personalise your smart TV to reflect your tastes and needs. And if you're concerned about the privacy aspects of using a web-connected television, we'll explain how to prevent your particular model from collecting your personal data.

ADD APPS TO YOUR SMART TV

Install new apps from your store

Your smart TV should come with plenty of apps, but adding more isn't difficult. The exact process will depend on the make and model.

If you have a **Samsung** TV, you'll need a free Samsung account to install apps. Assuming you do, press the Home button on your remote control, and select Apps at the bottom of the screen. You can browse popular and recommended choices, or if you know the name of an app you can select the magnifying-glass icon (pictured above right) and search for it. Select an app you want, then click Install on its page.

For **Panasonic** models, press the Apps or Internet button on the remote then select Market. Browse and install any app from there. **Sony** smart TVs are powered by Android, which means you can add new apps through the Google Play Store. Press the Home button on your remote control to open the Home Menu screen. Google TV replaced Android TV on new Sony models at the start of this year (see box on page 52 for the differences).

It's a bit more complicated with **Toshiba** TV sets because other manufacturers make the TVs and pay to use the Toshiba brand. Most new models are powered by Android TV, so you can install apps through Google Play Store. Click the Apps section under Explore Apps, then Get More Apps. Finally, **LG** TV owners can install apps by pressing Home on the remote to open the LG Content Store, then selecting the Apps category.

You may find that some new apps, such as Disney+ or BritBox, are absent. For example, Apple TV+ can be installed on Samsung, Sony, LG and Vizio smart TVs,

Search for Samsung apps by selecting the magnifying-glass icon

but not on Panasonic sets.

You can't force these missing apps to appear in your TV's app store, but set-top boxes, streaming sticks and games consoles also support apps, so try installing them through one of these devices. This method does mean you will need to launch the installed app through the device's menu, rather than directly through the TV, but it's a useful workaround.

Install TV apps from outside Google Play Store

If you have a Sony or Toshiba TV that lets you download apps from the Google Play Store, you'll also be able to sideload apps from elsewhere. This is similar to sideloading apps from outside Google Play on to Android phones and tablets.
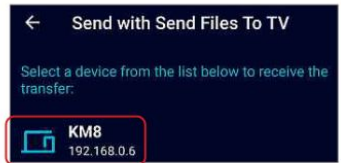
If you have an Android device, this process is very easy. First, you'll need to find the app you want to run in APK (Android Application Package) format. A good place to find these is at APKMirror (www.apkmirror.com). Go to the site on your Android phone or tablet, then search for the app you want to install (if you know its name), or browse by category (at the top). You can also simply scroll through the new releases.

When searching, tap the sliders at the right to open Advanced Search, then tap the Capabilities dropdown menu. Tick the 'Android TV' box (see screenshot below) to narrow your search, then tap Apply.

Next, install the 'Send Files to TV' app

Select your TV in the 'Send Files to TV' app to sideload apps from your phone to your Android TV

(www.snipca.com/39390) on both your Android device and your TV. Once it's installed on both, run it on your TV and select 'Receive', and then launch it on your phone and select Send. A list of files will appear on your phone in the Download folder, including the APK of the app you installed from APKMirror. Select this, then select your TV in the list of devices (it's KM8 in our screenshot above). When the transfer completes, you'll be able to choose to open the APK on your TV and install it. If you see a message stating that installations from unknown sources are not allowed, tap the Settings button in the message and select the slider next to the app you want to install. This should now work.

Another way to install an APK (and a good solution if you don't own an Android device), is to download the file from www.apkmirror.com to your PC, then copy it to Google Drive. Next, download 'File Commander' (www.snipca.com/39391) on your TV, and sign into Google Drive on your TV. Select the APK in Google Drive and it will install (again you'll need to change permissions so it can install apps from unknown sources). Turn to page 52 for our pick of the best apps on APKMirror.

You can also use File Commander to install apps stored on a USB stick that's connected to your TV. To find any app you've installed, click the cog icon on Android TV and navigate to the Apps section.

Sideloading: a health warning

As you might expect, sideloading isn't without risks: you need to be extremely careful about what you install because these apps haven't been vetted by Google. However, APKMirror is safe because it doesn't allow pirated apps, nor those that give you illegal access to pirated content. Also, it doesn't contain paid-for apps and checks that they work before listing them. Other APK sites aren't as safe. See box on page 52 for our five favourite apps on APKMirror.

Tick the 'Android TV' box to narrow your search for apps on APKMirror

Remove unwanted apps from Samsung TVs

Smartphones usually come with apps that you have no use for and which are locked to prevent you from deleting them. The same is true with smart TVs. While you'll be happy to have BBC iPlayer, ITV Hub and YouTube apps ready to use, you may have much less interest in CHILI, Rakuten TV, Hayu and TikTok. Removing these will help to declutter your TV's interface, making it easier to find what you want.
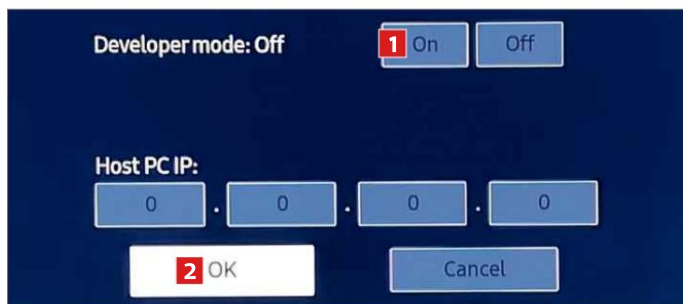
Samsung (like other manufacturers) lets you remove apps you install yourself – look for a delete option in the Apps menu. But unlike other manufacturers it also lets you delete apps that are built in using its Developer Mode (it doesn't work on *all* models, but it's worth trying).

Press the Home button on your remote control and select Apps. On the virtual keyboard type 12345. If it works, on your TV you'll see the 'Developer mode' box open in the centre of the screen. Select On (**1** in our screenshot below), then

OK **2** and a box will appear saying 'Developer mode is in On status'.

Next, turn your TV off and back on again. Go back into the Apps screen, and you should see 'Apps (Developer Mode)' at the top. Click the cog top right to open Settings, then choose an app to remove. The Delete button will still be greyed out, but if you scroll all the way down you'll see a new button called Deep Link Test. Click this and a new window will appear asking for a payload and content ID. Ignore this and click Cancel. The Delete button for the app should now be active, and you'll be able to click it and remove that item.

If Delete remains greyed out, the solution is to reset the Smart Hub on the TV. This is a bit extreme as it means you'll need to reinstall any apps you've downloaded as well as any accounts stored on your TV, so think carefully before proceeding. If you want to go ahead, open Settings, select Support, go to Self Diagnosis and click Reset Smart Hub. Enter the PIN you entered when you first set up your TV.

Enable Samsung's Developer Mode to delete locked apps that come with your Samsung TV

GOOGLE TV REPLACES ANDROID TV

Google TV is the successor to Android TV and brings big changes and improvements. Smart TVs that come with the system are still rare – the first models arrived only at the start of 2021 – but it will soon become much more common, especially on Sony TVs. The operating system is still based on Android, but with a new interface and a greater focus on content (TV shows and films), not just apps.

Signing into a Google account delivers personalised viewing recommendations (pictured). If someone else signs in with

their account they'll see different recommendations, and you can set up child profiles with parental controls. You can use an Android phone as a remote control for your TV (this has more options than the Android TV remote), and link any smart home devices – like a Ring doorbell – and control them using your voice through Google Assistant.

There's also a Google TV app for Android devices (www.snipca.com/39394) that lets you control and customise the system, though it's only available in the US for now.

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5 APPS TO DOWNLOAD FROM APKMIRROR

If you've never downloaded anything from www.apkmirror.com, here are five apps to get you started. Just make sure you ignore the misleading download adverts and click either the 'See Available Downloads' or 'Download APK' button (pictured above).

ExpressVPN
www.snipca.com/39402
One of the more popular VPNs, offering access to over 3,000 servers across 160 locations in 94 countries. There's a seven-day free trial after which it costs £9.63 a month, or £74.30 a year. For instructions on setting it up follow the guide at www.snipca.com/39416.

RetroArch
www.snipca.com/39403
As well as media players, RetroArch contains excellent emulators (called ROMs) for recreating old gaming systems like Atari, NES and Nintendo 64. Find out more at www.retroarch.com.

TuneIn Radio
www.snipca.com/39404
This app lets you listen to live news, sports, music, podcasts and radio from around the world. It's free to use, but if you want more content and fewer ads you can upgrade to the premium version for £7.84 a month.

Speedtest by Ookla
www.snipca.com/39405
If you find streaming video on your TV has started buffering, use Ookla's tool to check your and your 'ping' speed (also called latency), which is the time it takes for data to be sent from your end to a server on the internet and back again.

Nasa
www.snipca.com/39406
Nasa's app lets you view space images (over 16,000 of them) and videos (over 14,000), catch up on news and mission information, and find out when you'll be able to see the International Space Station overhead.

ADD SUPERB FEATURES TO YOUR SMART TV

Mirror your phone or tablet screen

Whether you want to browse the web, view photos and videos, or read emails and documents, duplicating the content of your phone or tablet on your smart TV's much larger screen can help you see things much more clearly. You shouldn't even need a cable or extra hardware to mirror your device's screen, because phones and tablets now offer this as a built-in feature. Provided your phone or tablet is connected to the same Wi-Fi network as your TV, you should be able to mirror its screen with a couple of taps.
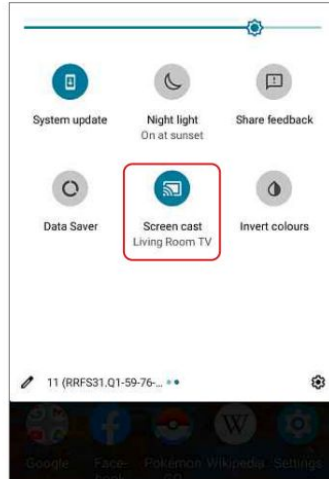
On an Android device, swipe down from the top of the screen and look for an option called Cast, 'Screen cast' (see screenshot right), 'Screen mirroring' or similar (the name varies between manufacturers). Select this and your phone or tablet will search for a compatible TV set. Tap your TV's name when it appears (see screenshot far right) to connect the devices and mirror the smaller screen on your TV.

On an iPhone or iPad, swipe down from the top-right corner of your screen to open the Control Centre. Tap 'Screen mirroring' and choose your smart TV to connect the devices using Apple's AirPlay technology. If this doesn't work, you may need to activate AirPlay on your TV. On a Samsung set, for example, go to Settings and select General, then 'Apple AirPlay Settings'. Select AirPlay and switch it on.
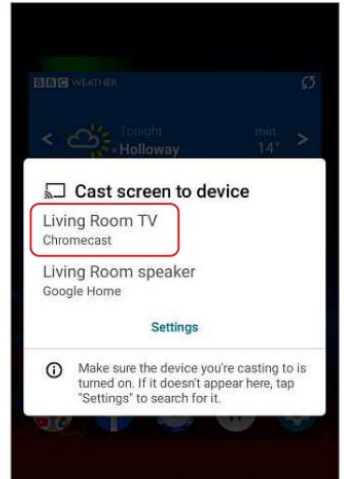
Many Android and iOS apps now provide their own options for mirroring video and photo content from your phone or tablet. Look for the Cast icon (rectangle with three curved lines) or AirPlay icon (rectangle with smaller triangle) in an app – this is usually in the top-right corner – then tap it to mirror your device's screen. This is a useful trick for viewing content on streaming services that aren't installed on your smart TV, such as Disney+, NOW TV and BritBox.

Stream files from your PC to your smart TV

One of the most useful hidden tricks for your smart TV is streaming videos, music and photos from any computer or other network-connected device with a DLNA (Digital Living Network Alliance) server. This means you can enjoy locally stored content on the big screen from the comfort of your sofa – and you don't need to install dedicated software.

Use Android's built-in Cast feature to mirror your device's screen on your smart TV

Windows 10 has a built-in DLNA server that you need to turn on to stream media files from your PC to your smart TV. Open the Settings app in Windows 10 and select 'Network & Internet', then 'Network and Sharing Centre'. In the window that opens, choose 'Media streaming options' in the left-hand menu, then click the 'Turn on media streaming' button (see screenshot below).

By default, this will let you stream all compatible files stored in your Pictures, Music and Video folders to other DLNA devices on your home network, including your smart TV. Give your media library a suitable name, then click OK to confirm and exit.

You can now browse and stream content from your PC's media library on your smart TV, though different TV models offer different methods for accessing your DLNA server. On a Samsung TV, you should find it in the Sources menu. If you

Activate media streaming in Windows 10 to play music and video files on your smart TV

have a Panasonic TV, press the Home button on your remote control and select Devices. On an LG TV, go to Sources, then SmartShare. Sony Bravia owners should press Home on their remote and look for their media files in the Photo, Music and Video folders. Android TVs let you install dozens of DLNA streaming apps from the Google Play Store, including our favourites VLC (www.snipca.com/39384) and Plex (www.snipca.com/39385).

Create a custom photo screensaver

Most smart TVs display a screensaver when you're not using them. This prevents them from suffering 'screen burn' by showing the same still image for too long and also conserves power. The screensaver, which your TV may call 'Ambient mode','Gallery mode' or similar, starts automatically after a set period of inactivity and cycles through attractive images and abstract designs from the manufacturer's collection. Some TVs let you make your screensaver more personal and interesting by using your own photos, though this depends on the model and you may be limited to just changing your home-screen wallpaper.

On an Android TV-powered set, the easiest way to do this is to use the Google Home app for Android (www.snipca.com/39379) and iOS (www.snipca.com/39380) in conjunction with Google Photos. Open the Home app on your Wi-Fi-connected phone or tablet, select

your smart TV, then press the three-dot menu button and choose 'Ambient mode settings'. Tap the Google Photos option and select the albums you want to include in your screensaver. You can also show information about your pictures, display the current time and weather, and adjust the slideshow speed.
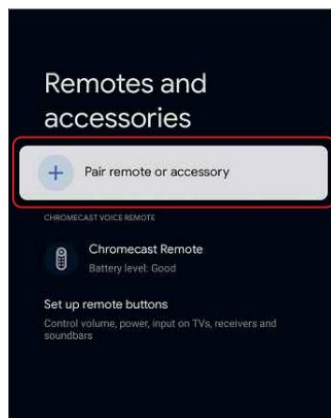
Other smart TVs may offer a similar option through their own mobile apps – for example, Samsung's SmartThings (www.snipca.com/39382). Check the support section of the manufacturer's website for details.

If you can't display photos directly from an app, you may be able to plug a USB stick into your TV and access them from there.
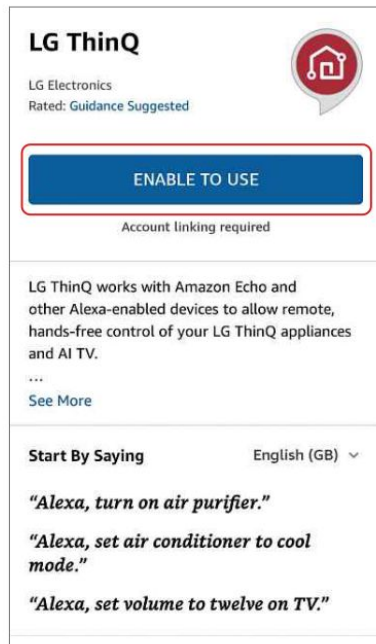
Listen to your TV via wireless headphones

When you're watching TV late at night, or in a room where someone is working or sleeping, it's only good manners to keep the volume down – but this can mean missing important dialogue. One solution is to connect a pair of wireless headphones to your smart TV, so you can hear what's going on without being cabled to your set. Provided your TV supports Bluetooth (which most newer smart models do), this is easy to set up, whether you have a cheaper set of Bluetooth headphones or pricier 'earbuds', such as Apple's AirPods (pictured below right).

First, check if your smart TV has Bluetooth built in. On a Samsung TV, for example, go to Settings, select Sound, then choose Sound Output. If the option Bluetooth Speaker List appears, your TV supports Bluetooth. Search your TV manufacturer's support website if you're

Enable your smart TV's Alexa skill to control it hands-free through your Amazon Echo smart speaker (above right)

unsure where to find this setting.

Next, put your Bluetooth headphones in pairing mode – usually done by long-pressing the power or 'call' button for several seconds. On your smart TV, find the setting to pair a Bluetooth audio device, scan for available devices and select your headphones when they appear. With Samsung TVs, you can follow the steps above, while on Android TVs go to Settings, then 'Remotes and accessories' and choose 'Pair remote or accessory' (see screenshot left) or 'Add accessory'. On LG TVs, go to Settings, then Advanced Settings and choose 'Sound Out' from the Sound menu.

Pair your Bluetooth headphones or Apple AirPods (right) with your smart TV to watch it without disturbing others

Control your TV with your voice

Being able to control your smart TV with your voice saves you having to navigate on-screen menus when you want to find something to watch, adjust the volume or turn the set on or off.

Most smart TVs now come with Alexa or Google Assistant built in: you simply press the microphone button on your remote control and speak your command. But if you can't find your remote, or you want to operate your TV entirely hands-free, you can use your Amazon Echo (pictured above) or Google Home/Nest smart speaker for voice-only control.

To do this, you'll need to integrate your smart TV manufacturer's app with the relevant voice assistant. For Samsung TVs, install the SmartThings app (www.snipca.com/39382) on your phone or tablet. For LG sets, install the ThinQ app (www.snipca.com/39387). Open the app and follow the on-screen instructions to connect it to your TV.

If you have an Amazon Echo, open the Alexa app on your phone or tablet, tap More then choose 'Skills & Games'. Search for your smart TV's skill – such as 'SmartThings' or 'LG ThinQ' – then tap Enable To Use (see screenshot above left). Sign into your account with your TV manufacturer, then tap Authorise. You can now use voice commands such as "Alexa, turn off living room TV".
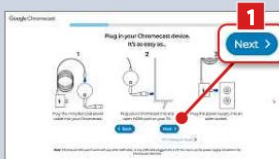
For Google Home/Nest speakers, open the Google Home app then tap the plus sign in the top-left corner. Choose 'Set up device', then 'Works with Google' and select the appropriate smart TV app. Tap 'Link' when prompted, sign into your account with your TV manufacturer and choose Authorise. With Android TVs, the Home app should detect your smart TV automatically, which makes setting up hands-free voice control much easier.

There are two ways to get VLC on your TV. On an Android TV, you can install it from the Google Play Store: simply search for it by typing VLC on your remote control. But if you have a lot of videos to watch on your PC, or your smart TV runs a non-Android operating system, you can stream them to your smart TV using VLC (www.videolan.org) and Google Chromecast, which plugs into a spare HDMI socket on your TV. There are more expensive models of the Chromecast, with Google TV and Netflix included, but you can buy the cheapest £30 model from www.snipca.com/39422.
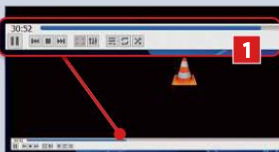
1 If you haven't yet set up your Chromecast, go to www.snipca.com/39423 on your computer. Click the blue Start button, then Next. Plug your Chromecast into an HDMI port on your TV and switch to the correct AV source using your remote control. Click Next in your browser **1** and follow the rest of the setup instructions, which will include downloading the Google Home app on your phone or tablet and using this to connect the device to your wireless network.

2 Once your Chromecast is working correctly and connected to your network, it's time to stream some video to it. Unlike some other programs, VLC doesn't offer a Cast button. Start a video playing on VLC on your computer then go to Playback **1**, then Renderer **2**. <Local> should be selected **3**, which means that video will play inside VLC. The software will now scan your network.

3 Wait for a few seconds then open the Playback, Renderer menu again. This time you should see your Chromecast listed (it's 'Wayne' in our screenshot **1**). If you don't see this entry, double-check that the Chromecast and your PC are connected to the same wireless network and repeat the process.

4 Once you see your Chromecast listed, select it and the VLC window will go black and show its traffic-cone logo **1**. This means the video is now streaming to your device. Sometimes, you may try to play a video in a format that requires conversion, and you'll see a message **2** warning that this can use a lot of resources. Just click OK to close this.
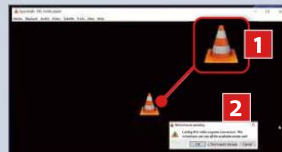
5 You can control the playback in VLC just as if it was playing in the video window. Although you'll obviously only see a black screen there, the progress bar at the bottom will show you where you are in the video **1**. When you've finished streaming the content, go back to the Renderer menu in VLC and select <local> again. The video will start playing in the app and not via Chromecast.

6 Another way to stream video playing in VLC is to use Google Chrome. Start your video (the renderer should be <local> as normal) and launch the Chrome browser. Click the three dots at the top right **1** and select Cast. In the window that opens, select your Chromecast **2**, then click the Sources dropdown menu and select 'Cast desktop' **3**. Switch back to VLC and maximise the window. What's playing in VLC will now also appear on your TV.

WATCH VIDEOS USING PLEX

If your TV lets you install apps, you should be able to run Plex on it directly – just search for plex in your TV's app store (on Android TVs you can run the same Plex app from the Google Play Store as used on Android phones and tablets). Once installed, run the app and sign into your Plex account to access your media library. You can see a full list of Plex-supported TVs at www.snipca.com/36049.
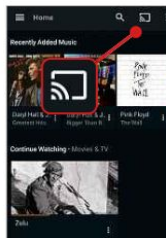
Don't worry if your TV isn't listed or is no longer supported – there are other ways to use Plex with it. Our favourite is via a Chromecast (which you can also use with VLC – see Workshop above). With your Chromecast device set up and plugged into your TV, open the Plex app on your phone or tablet, tap the Cast icon (see screenshot) and select your Chromecast device from the list. Once connected, you can use your mobile device as a remote control for your Plex library. Anything you select will be played on your TV – you can pause, fast-forward, rewind and more using the app.

Plex apps are also available for other streaming devices, including Amazon's Fire TV (www.snipca.com/36051) and Roku sticks (www.snipca.com/36052).

Open the Plex app on your phone or tablet then tap the Cast icon

STOP YOUR SMART TV SPYING ON YOU

As with any 'smart' device that's always connected to the internet, your smart TV can compromise your privacy by collecting data about you. Although you may be happy with it tracking your viewing habits so it can make recommendations based on TV shows and films you've watched, there's no reason for it to gather details about *everything* you do. The only way to prevent all data collection is to disconnect your smart TV from the internet, and turn it into a 'dumb' device.

Instead of that extreme option, you can at least turn off automatic content recognition (ACR). This is the technology used by smart TVs to collect data about everything you watch across streaming services, terrestrial channels and even DVDs and Blu-rays. The information is then used to target you with relevant ads.

After their use of ACR was exposed in 2017 (www.snipca.com/39407), manufacturers now let you opt out of the feature when you set up your TV, but the option is easy to miss and you may have bought your set before this consent was required. Here's how to protect your privacy by disabling ACR on the most popular smart TVs.

Samsung
On newer Samsung smart TVs, including 2019 and 2020 models, go to Settings, then Support and scroll down to 'Terms & Privacy' (or 'Terms & Policy'). Select 'Privacy Choices' and turn off 'Viewing Information Services'. You can also switch off 'Internet-Based Advertising' to stop your TV showing personalised ads.

On older Samsung sets, select Settings in the Smart Hub menu, and go to Support, then 'Terms & Policy'. Choose 'SyncPlus and Marketing' and select 'Disable SyncPlus and interactive marketing services'.

LG
The key setting to disable on LG TVs is the 'user agreement' for Live Plus (the company's name for ACR). On most LG sets, you go

Turn off your smart TV's mic and camera

We mentioned the benefits of controlling your smart TV with your voice on page 55, but if you never use this feature you can switch off your TV set's microphone. Otherwise, it could be 'listening' to your private conversations, though to be fair most TV manufacturers require voice control to be activated manually via a button on the remote.

To prevent eavesdropping on a Samsung smart TV, go to Settings, then System, open Expert Settings and turn off 'Voice Interaction'. On older sets, look for a 'Voice Recognition' option under 'Smart Features' on the Expert Settings screen. On an LG TV, go to Settings, then General, and select 'About This TV'. Choose 'User Agreements' and switch off 'Voice Information'.
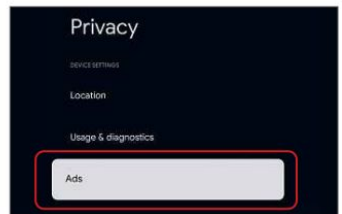
Smart TVs generally don't let you disable their cameras, so the standard advice for addressing this risk is to place a piece of black tape over the lens.

to Settings, then All Settings, scroll down to General and select 'About This TV'. Choose 'User Agreements' and switch off the 'Live Plus User Agreement'. You can also disable 'Personalized Advertising' (or 'Interest-Based Advertisement') here. If you don't see 'User Agreements', look under Support, then Additional Settings.

Sony
Since 2018, all Sony Bravia smart TVs have run Android TV (now called Google TV – see page 52), and there isn't a way to opt out of Google's data-collection privacy policy. However, some older Sony sets also use an ACR system called Samba, which *can* be disabled. Go to Settings, then System Preferences or Device Preferences (depending on the model), select 'Interactive TV Settings' or

Turn off this option to stop your Sony Bravia TV tracking your viewing habits

'Samba Interactive TV' (see screenshot below left) and choose Disable or Off. You can also choose Privacy Policy below this option and enable 'Limit Ad Tracking' to prevent personalised advertising.

Prevent personalised ads on an Android/Google TV using the Privacy menu

Other Android TVs
As with Sony sets, you can't stop Google tracking your viewing habits on other Android-powered smart TVs, such as those from Sharp, Toshiba, HiSense, Philips and Panasonic,, but you can look for a similar option to disable ACR technology in their settings menus.

On an Android/Google TV, it's also worth going to Settings, then Privacy and choosing Ads (see screenshot above), then selecting 'Opt out of Ads Personalisation'. This will stop Google displaying creepy ads based on your viewing and browsing activities. **ca**