LATEST SMARTPHONES, TABLETS & WEARABLES

ANDROID ADVISOR

ISSUE 49

FROM IDG

PICTURE PERFECT:

Hands-on with Huawei's triple lens P20 Pro

XIAOMI UNVEILS MI MIX 2S

BEST ANDROID VPNs REVEALED

HOW TO GET ANDROID P DEVELOPER PREVIEW

CONTENTS

CONTENTS

NEWS

Android Wear becomes Wear OS

A new name won't fix its problems. MICHAEL SIMON reports

Google has announced that it's changing the name of its wrist-sized OS from Android Wear to Wear OS by Google. The rebranding is rolling out now and should start appearing on phones and watches in the coming weeks.

To say Android Wear is in need of a change is something of an understatement. Google's smartwatch OS received its last major update in

February 2017 with version 2.0, after months of delays. It's been two years since Google announced any new features to Android Wear, and some manufacturers have abandoned the platform due to low sales.

Android Wear started out with lots of promise, but it fizzled out almost as quickly as it arrived. While the first crop of watches were praised for their smart, circular designs (a direct contrast to the square design of Apple's Watch), a dearth of features and buggy performance kept them from being truly great. Version 2.0 was supposed to fix many of Android Wear's shortcomings, but a months-long delay and a lack of commitment from popular watchmakers such as Lenovo, kept the Android Wear 2.0 launch from being as triumphant as it should have been.

And the crop of watches that followed didn't help. From the LG Watch Sport to the Huawei Watch 2.0, big and bulky became the new norm with Android Wear. Gone were the sleek circles we saw with the Moto 360 or original Huawei Watch, replaced with LTE-enabled behemoths that required equally giant wrists. And since mid-2017, we haven't seen any Android Wear watches from manufacturers other than fashion brands with limited functionality.

Where oh Wear?

Since the launch of version 2.0, Android Wear has shifted from a tech-minded OS to a fashion-centric one. Out of the hundreds of watches based on the platform, nearly all of them are from Fossil brands such as Michael Kors, Kate Spade, or DKNY, and that could be the reason for the change here. If Google is

giving up on wearables as tech accessories, divorcing it from the Android name will certainly help sales at department stores. The Google name carries far more cachet than Android does, so the change certainly makes more sense for fashion watches.

But it could also bring some significant changes to the part of Android Wear we care most about. While Apple has pretty much lapped Google in terms of functionality and sales, a new start for Android Wear could mean a revamp of the interface and features. Compared to watchOS 4, Android Wear 2.0 is outdated and slow, but it still has a solid foundation. There's Google Assistant, an on-watch Play Store, and an excellent fitness app, as well as support for rich notifications and music streaming.

The LG Watch Sport is too big for most wrists

Yes, it's in need of an overhaul, both in terms of software and hardware. I would love to see Google go all-in on Wear OS with a Pixel Watch that offers the same level of design and performance as Google's phones, with regular updates, exclusive features, and tight integration with the ecosystem. Android Wear's biggest problem is lack of support, and new branding could give the platform a shot in the arm, provided Google combines that with real changes.

We'll have to wait and see if Wear OS represents a new chapter for Google's wearable platform. In its announcement of the name change, Google notes that it's "just scratching the surface of what's possible with wearables and there's even more exciting work ahead". Whether that means version 3.0 will be shown off at Google I/O or a complete redesign is in the cards is unknown – at least we do know that Google hasn't completely forgotten about it.

NEWS

Xiaomi unveils Mi Mix 2S

MARIE BLACK reveals everything you need to know

Xiaomi has announced its Mi Mix 2S, an upgrade on the Mi Mix 2 with an enhanced camera that integrates AI, improved performance, wireless charging and more. It's available to buy now from **fave.co/2uL0frp** priced £481.

New features

It was no surprise to see Xiaomi add the 2.8GHz Qualcomm Snapdragon 845 processor, Adreno 630 GPU and 7.5W Qi wireless charging to the Mi Mix 2S. The result is up to 30 percent increased performance and 15 percent improved power efficiency, plus added convenience. Though wireless charging is slower than

cable charging (the Mi Mix 2S will wirelessly charge in two hours and 40 minutes), it's handy to be able to throw down your phone and not fiddle with cables.

The Chinese firm has increased the screen-to-body ratio and created a design that somehow beats the previous impossibly good-looking and award-winning handset, with a full-screen 5.99in display (sans notch), a curved ceramic body and 7000-series aluminium frame. Xiaomi says it's the perfect marriage of technology and art.

Xiaomi has also implemented Face Unlock and ARCore technology and support for 43 global bands, and it's upgraded the camera. The latter is the headline feature in this upgrade.

Now with two 12Mp cameras at the rear (wide-angle plus telephoto), the Mi Mix 2S integrates AI and can do clever stuff such as on-the-fly translation and currency conversion, and intelligent background blurring. The latter is actually also possible from a single camera, which means you can create bokeh-effect selfies, too.

It's a seriously impressive camera – Apple's iPhone X took an absolute battering during the launch in comparison – and a high DxOMark score of 101 points places it two points higher than even the Samsung Galaxy S9. You can see one of the photos captured by the Mi Mix 2S overleaf.

The camera has an incredible 206 preset scene modes, and with dual-pixel autofocus that increases the number of focus points 30 times over is super-fast to compose a shot. More impressive still is the massive 1.4µm pixel size, which makes for even better

NEWS

low-light shots with 25 percent more light intake, 2x optical zoom, four-axis OIS and hardware-level noise reduction.

The sensor in question is a Sony IMX 363 with a six-element lens and f/1.8 aperture.

Specifications

- 5.99in (2160x1080, 403ppi) IPS LCD capacitive display
- Android 8.0 Oreo
- Qualcomm SDM845 Snapdragon 835 processor
- Octa-core 4x 2.8GHz Kryo 385 Gold and 4x 1.8GHz Kryo 385 Silver CPU
- Adreno 630 GPU
- 6/8GB RAM
- 128/256GB storage
- Fingerprint scanner
- Dual rear-facing cameras: 12Mp (f/1.8, 1/2.55in,

1.4µm) and 12Mp (f/2.4, 1/2.9in, 1µm), 2x optical zoom, dual pixel phase detection autofocus, 4-axis OIS, dual-LED dual-tone flash
- 5Mp front-facing camera: f/2.0, 1.4µm, 1080p
- 802.11ac Wi-Fi
- Bluetooth 5.0
- A-GPS, GLONASS, BDS
- USB 2.0 Type-C
- Non-removable lithium-ion 3,400mAh battery
- 150.9x74.9x8.1mm
- 191g

NEWS

Xiaomi announces Mi7

MARIE BLACK looks at the ultimate Chinese phone of 2018

Having introduced the new trend with its Mi Mix, Xiaomi will once again jump on the 18:9 'borderless' display bandwagon with its next flagship. The Xiaomi Mi7 will be announced in standard and Plus models, and could arrive in June.

It will pack some powerful hardware, including the Snapdragon 845 and a colossal 8GB of RAM, and it could be one of the first flagships to feature a fingerprint scanner embedded in the display. It could also be the first second Xiaomi phone to include 7.5W wireless charging – as we saw on page 8, the firm has also launched the Mi Mix 2S with 7.5W Qi.

Release date

The Mi6 was announced in China on 19 April 2017, and began shipping in June. Xiaomi follows an annual release schedule like all major smartphone makers, so we expect to see the Mi7 announced at a similar time in 2018. Recent rumours point to a June launch, however, and a Weibo post from industry insider Mocha RQ points to the embedded fingerprint scanner as a reason for this.

Price

Xiaomi phones aren't officially sold in the UK, so their RRP has little importance here. To buy the Mi7 in the this country you'll have to go through a Chinese site such as GearBest or Geekbuying. The latter is already listing a product page for the Mi7 Plus with a price tag of £343.17, though expect this to change before the phone actually becomes available.

If you are planning to ship the Mi7 from China, bear in mind that you will be liable for import duty, which is calculated at 20 percent of the value printed on the shipping paperwork, and usually with an additional admin charge of around £11.

Something else to watch for is that the Mi7 may not support all UK 4G LTE bands, and depending on where you buy it Google Play Services may not be preinstalled. It will also be running MIUI 9.0 rather than stock Android.

New features

The Geekbuying listing alludes to a 6.01in 18:9 display on the Xiaomi Mi7 Plus, while the standard Mi7

should finally see an update to its usual 5.15in screen dimensions with a 5.65in 18:9 display. On the Mi7 Plus at least this is said to be an OLED panel from Samsung.

Xiaomi has never implemented a display panel with a higher than full-HD resolution before, and we're not expecting that to change. If it maintains the full-HD resolution with an 18:9 aspect ratio we should see 2160x1080 pixels on the Xiaomi Mi7 and Mi7 Plus.

This is backed up by a screenshot leaked by Playfuldroid, which suggests the Mi7 will have a 5.6in full-HD (18:9) screen. It also alludes to the inclusion of the Snapdragon 845, 128GB of storage, a colossal 8GB of RAM, 16Mp dual-cameras and a 4,480mAh battery.

What's particularly interesting from the image associated with Geekbuying's listing (although we should point out that we do not know from where Geekbuying has got its information) is the fingerprint icon shown on the screen itself. The tech is ready to embed fingerprint scanners in smartphone displays, and we've already seen such a feature in an upcoming phone from rival Vivo at January's CES 2018. There's certainly no fingerprint scanner pictured on the front of the Mi7 Plus, and neither is one visible on the rear.

However, a render leaked by Android Headlines shows a fingerprint scanner on the rear of the device, along with a glass back panel.

Something else Xiaomi has never done before in its flagship line is to implement wireless charging in its smartphones. Xiaomi has joined the Wireless Power Consortium, and the Mi Mix 2S is the first to include 7.5W Qi. We'd expect the Mi7 to follow suit.

BEST BUY LAPTOPS, TABLETS, WEARABLES

TECH ADVISOR

FROM IDG

Dell XPS 13 9370

Powerful, portable and stylish Windows laptop

IDG JUNE 2018

BUILD YOUR OWN COMPUTER WITH A DIY KIT

REVIEW:

Samsung Galaxy S9

Stunning new flagship that's hard to beat

PREVIEW

Android P

Google's first preview of Android P brings support for notched displays and indoor location services, writes MICHAEL SIMON

The first developer preview of Android P has arrived, and with it Google is ready to show off the next phase of its mobile vision. And notches are all the rage. As previously rumoured, it will introduce display cutout support for Android apps,

letting developers "take full advantage of the latest device screens with full-screen content". And it's not just the status bar and home screen that will get the support. Google is expanding support for notched displays into all areas of Android P, including APIs so developers can get creative with their apps.

According to Google, "Cutout support works seamlessly for apps, with the system managing status bar height to separate your content from the cutout. If you have critical, immersive content, you can also use new APIs to check the cutout shape and request full-screen layout around it."

Notch support

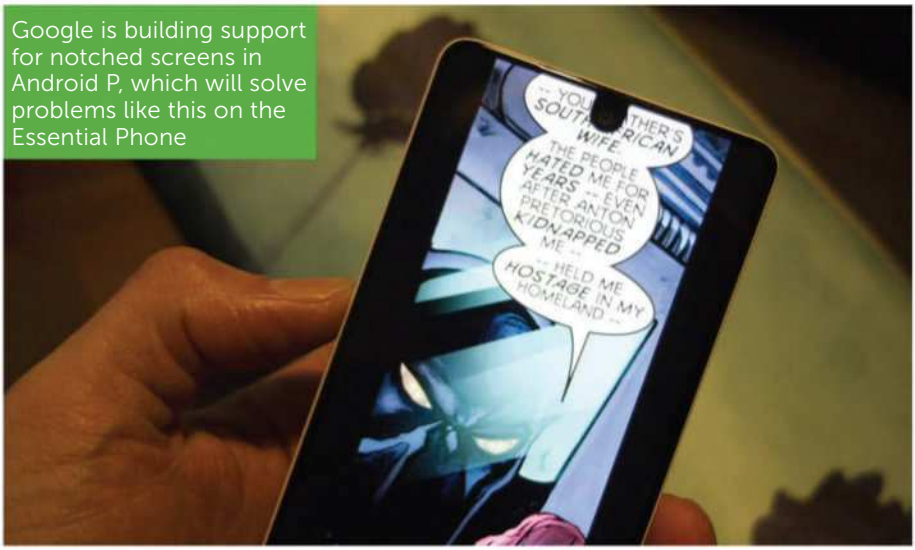
Get ready for notches. While the first phone with a notch was technically Andy Rubin's Essential Phone, Apple mainstreamed the look with its bezel-less iPhone X. After we saw a flurry of notched phones released and rumoured during MWC this year, however, it's clear that it will become a trend in 2018 and beyond. And with Android P, Google wants to ensure users are getting the best possible experience.

With support baked deep into the operating system, phone makers and app developers will actually use the full screen to their advantage, creating content that fits correctly and using the notch to add creative controls and data. So maybe we won't hate them so much.

Moving pictures ahead

Along with notch support, Google is also readying Android for the next generation of photos and videos. Version P brings support for HDR VP9 Profile 2, so

PREVIEW



Google is building support for notched screens in Android P, which will solve problems like this on the Essential Phone

app developers will be able to deliver HDR-enabled movies from YouTube, Google Play, and other sources on HDR-capable devices. Several premium Android phones are already capable of receiving HDR10 and Dolby Vision content, including the Samsung Galaxy S9, LG V30, and Pixel 2, and Android P will only accelerate the availability of content.

Google is also adding High Efficiency Image Format (HEIF) image format encoding into Android P. Developers will be able to take advantage of the compression and storage benefits of HEIF by offering the popular format as an option in their apps.

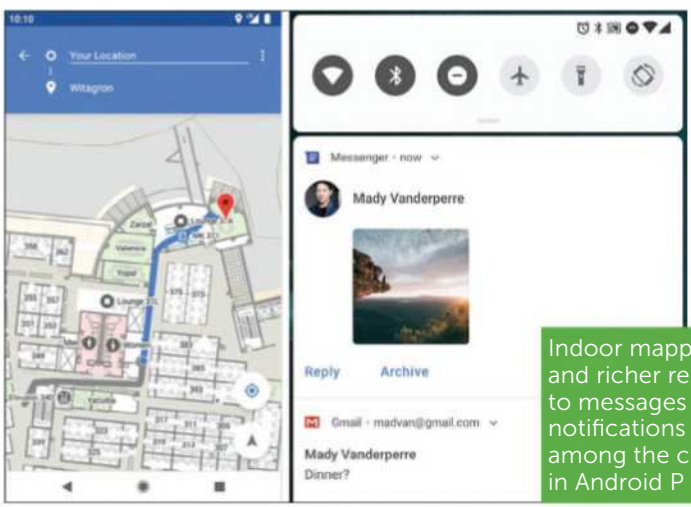
Additionally, Android P will embrace dual-camera systems, letting third-party camera apps "access streams simultaneously from two or more physical cameras on devices running Android P". That means

developers will be able to do more with the second lens on dual-camera devices, letting them get creative with portraits, black-and-white, wide-angle shots, and anything else the secondary camera provides.

Notifications, mapping, and more

It wouldn't be a new version of Android without changes to the notification system, and Google has "put a priority on improving visibility and function in notifications" in Android P. Messaging alerts should become more dynamic, highlighting who is sending a message and how to reply, as well as displaying full conversations, and letting you attach photos and stickers, all without opening the app.

Android P will also bring support for the IEEE 802.11mc Wi-Fi protocol (or Wi-Fi Round-Trip-Time), so apps will be able to bring location services indoor where GPS might be spotty. With Android P, apps



Indoor mapping (left) and richer replies to messages inside notifications are among the changes in Android P

will be able to calculate the device position with an accuracy of 1- to 2m, Google says. That kind of accurate indoor positioning will help apps with indoor mapping and location-based information.

Among the other changes in Android P will be expanded availability of Google's neural network, improvements to Autofill, and support for the Open Mobile API for secure smart-card payments. There will also be improvements to security, app compatibility, and privacy, as well as the usual speed and power efficiency improvements.

How to get the Developer Preview

The Android P Developer Preview is available only to the Pixel, Pixel XL, Pixel 2, and Pixel 2 XL. You can download the Android P system image (**fave.co/2pHDYFN**) and flash it to your device, or run Android P in an emulator (**fave.co/2I5ne28**).

If you do decide to flash the Developer Preview, to revert to your current operating system you'll need to flash a factory image.

We aren't providing step-by-step instructions because the Developer Preview is not intended for normal users. A consumer preview will be available soon, likely at Google I/O in May. We'd strongly recommend waiting until then to try the latest features.

REVIEW

Samsung Galaxy S9

£739 inc VAT from fave.co/2sXJKXV ★★★★½

Samsung's Galaxy S9 is the first flagship to hit the market in 2018. The S8 was almost a perfect phone, so can Samsung really make it even better? Read on to find out.

Design

It's immediately clear that the Galaxy S9 is very much a new version of the S8, rather than a radically new device. Like a point upgrade in software terms if

you like, so this is essentially the Galaxy S8.1. With an almost identical design to its predecessor you'd be hard pressed to notice the difference, especially from the front – the bezels above and below the screen are a fraction smaller. The device is also shorter than the S8, and it's a bit thicker and heavier at 8.5mm and 163g, but none of these are things you'll really notice.

At the rear, the change is more obvious with the fingerprint scanner moving to below the camera. Samsung clearly listened to feedback on this, so not only does it look nicer, it's also much easier to reach and use. You might still smudge the camera up occasionally but it's bound to happen far less.

Initially there will be three colours to choose from: Midnight Black, Coral Blue and a new Lilac Purple. We've also spotted what looks like Samsung's Orchid Grey (see below) colour in some images, so perhaps this will arrive at a later date.

Hardware

As we've touched upon, the Galaxy S9's design isn't very different in design from its predecessor, so is it a big jump in specs and new technology? Well not really, but Samsung has made improvement to what was already a very impressive smartphone.

Display

The screen is one area that hasn't changed since the Galaxy S8, so it's still 5.8in on the regular model and jumps to 6.2in if you get the S9+. Both phones have the curved Infinity Display, so you only need to choose which size you want.

Samsung is sticking to its 18.5:9 aspect ratio, Quad HD+ resolution and Super AMOLED technology. It's still one of the best screens on the market and compared to our S8, looks a little brighter.

As previously, you can take advantage of features such as the Edge screen, where you can swipe in from the side and flick through various panels of things like popular contacts, apps and more. There's also the always on feature, which displays important information on the lock screen when the phone is off.

There are plenty more smaller features, many of which have been around a long time, hidden away in the settings menu, so it's worth exploring what the S9 can do, especially if this is your first Galaxy device.

Processor, memory and storage

With a new flagship comes a new processor and Samsung has fitted the Galaxy S9 with a new Exynos 8910 processor. It's still an octa-core chip with four

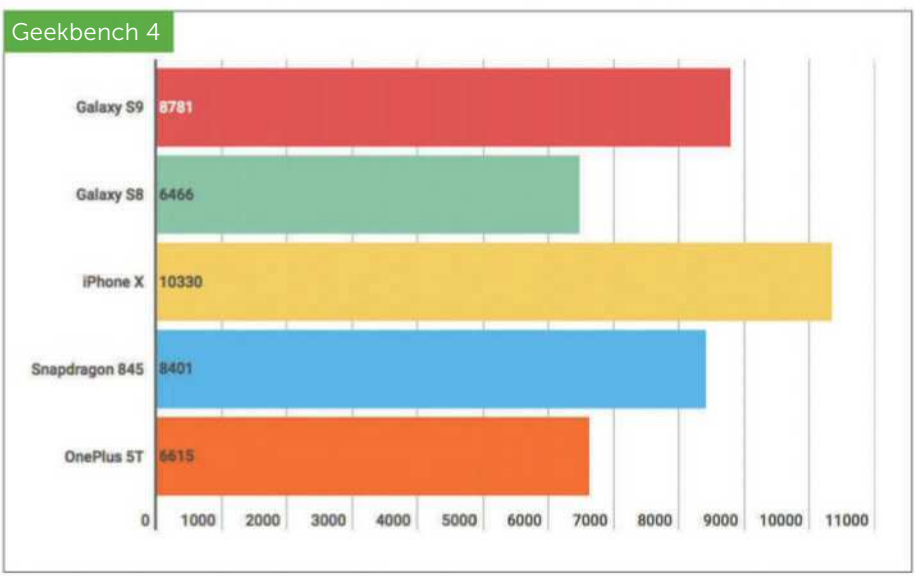
REVIEW

1.7GHz efficiency cores, but the faster four have jumped from 2.4- to 2.7GHz.

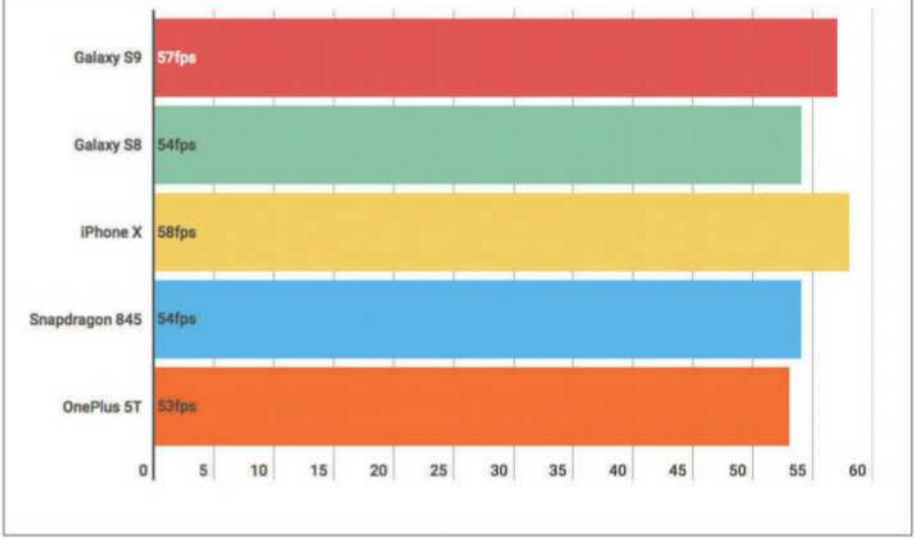
As you can see from the benchmark results, the Exynos outpaces the Snapdragon 845 a little bit (figures via Qualcomm's reference design), but neither can match the raw power of the iPhone's A11 chip. We've included the OnePlus 5T so you can get an idea of the performance on offer at a much lower price.

It's important to note that performance isn't an issue here and the S9 is clearly capable of handling all you can throw at it.

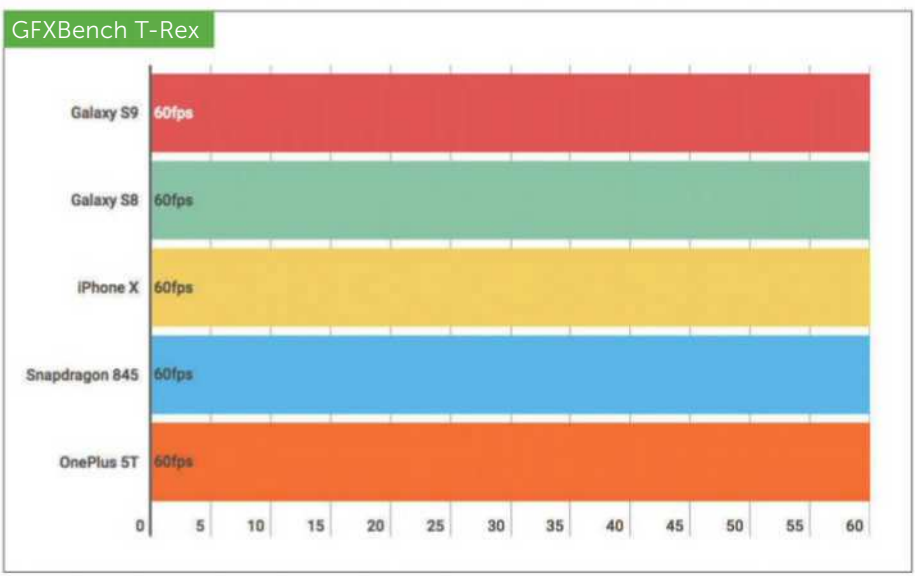
Like the Galaxy S8, you get 4GB of RAM and 64GB of internal storage, and although you can find more elsewhere (even in cheaper phones like the OnePlus 5T) it should be enough for most people. If it's not enough storage, then there's a 256GB option and a



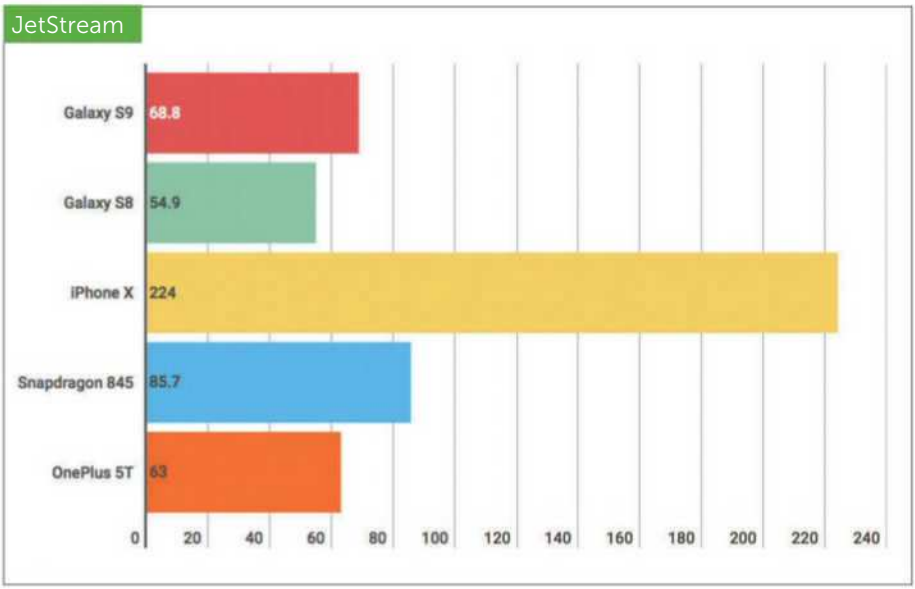
GFXBench Manhattan



GFXBench T-Rex



REVIEW



microSD card slot that can now take up to 400GB. If you are more of a power user, then the S9+ has 6GB of RAM with the same storage options.

Connectivity and Audio

There's not much Samsung can do to improve connectivity on a 2018 flagship smartphone. Like the S8, the S9 has all the things you'd expect including 11ac dual-band Wi-Fi, Bluetooth 5.0, NFC, GPS, USB-C and a headphone port.

Unlike most, Samsung continues to offer heart rate monitor. The S9 can reach 4G speeds of 1.2Gb/s, which is impressive, but in real life you're not going to see that. There's no Quad DAC for better headphone audio like the LG V30, but Samsung has improved the

speakers on the S9. There are now stereo speakers with the usual down firing one on the bottom and now one where the earpiece is above the screen.

It's the same setup Apple uses for recent iPhones, and also one Sony has adopted with the XZ2.

It might sound a little odd with both firing in different directions, but we'll take it over a mono speaker any day. There's still tuning from AKG and this time Samsung has also added Dolby Atmos, which you can toggle for a bigger, more spacious soundscape.

There's a noticeable improvement compared to the S8, particularly in the on-board speakers. They've got a lot more power but aren't flawless, with the audio quality getting a bit rough at higher volumes. We do like the optional Dolby Atmos mode, which can make content a lot more immersive, especially video.

It's worth noting that the supplied AKG headphones are very good, so most users won't be rushing out to find a replacement pair.

Samsung's upgrades in the audio department are welcome, but the S9 isn't the best phone around for audio – that's still the LG V30.

Fingerprint and Iris scanners

The fingerprint scanner has been moved to a more convenient location below the camera. It's also easier to register each new finger according to Samsung with only three swipes rather than many more touches needed previously. We actually managed to register two fingers in just two swipes each. The fingerprint scanner is quick (not the fastest around, but plenty fast enough) and accurate and can now

REVIEW

Facial recognition

be used to pull the notification panel down – just switch it on in the settings.

We'd rather the Galaxy S9 had the fingerprint scanner embedded in the screen as the tech is out there but it seems we'll have to wait.

Samsung hasn't explicitly said the iris scanner is better than before, which is a shame, but the firm is keen to point out that it's embedded in the front of the phone without a notch like the iPhone X. There's also a new Intelligent Scan option, which combines iris and facial scanning.

One thing is for sure, there's a dramatic improvement over previous iterations. Generally, it works quite well, but it's not as consistent compared to rival phones just doing face unlock. Even switching

to just facial scanning it's not as good as phones like the iPhone X and OnePlus 5T.

Cameras

The biggest change on the S9 comes in the camera tech, as teased by Samsung before the launch with its 'The Camera. Reimagined' campaign.

Sadly, it's the S9 that's not as impressive as you'll have to get the S9+ to get a dual-camera setup. We'd like to see dual-cameras as standard on both phones, but it's understandable that Samsung wants more than just size to differentiate the two.

Still, the S9's camera is improved from before, even though it remains at 12Mp with 1.4µm pixels and OIS. The main upgrade is an adjustable aperture that can go down to f/1.5 – the best of any phone on the market.

Huawei temporarily had the fastest lenses (on the Mate 10 Pro) at f/1.6, but the S9's lens now lets in 28 percent more light than on the S8.

The iris is mechanical like a DSLR camera and should mean better results in both daylight and low light. What Samsung calls the 'Super Speed Dual Pixel' package now has DRAM, so it can do things faster and more intelligently. The camera now takes 12 shots together instead of three to improve noise by 30 percent. DxO has awarded the Galaxy S9+ a score of 99 for the camera, the highest of a phone to date. The regular model might not have the telephoto lens but it's still excellent on its own.

You can see a landscape image and a photo taken in low light overleaf. The Galaxy S9 might not be

REVIEW

Landscape

Macro shot

Low light

doing the same level of clever software processing that makes images look great on the Pixel 2 phones, but it's still very impressive.

Overall, the S9 has a camera that can achieve excellent results in all conditions, partly thanks to that dual aperture. You get crisp shots in decent light – although some can be a little washed out like our shot of St. Pancras (opposite) – stunning detail in macro and most noteworthy is how well it copes in low light, without excessive levels of noise.

We're still not totally convinced by Bixby, but the camera part, Bixby Vision, has been improved and can now do live translation, better place recognition and more food features, such as calories and recipes. The latter will be market dependant.

Super slow motion

Furthermore, the S9 can now match Sony's flagship Xperia phones and shoot super slow-motion video at a whopping 960fps. That means 0.2 seconds in real life becomes six seconds of video and Samsung has some clever tech to make it easier to make great slow motion videos.

With Sony's phones we found it hard to press the super slow-mo button at the right time while recording a video of something that happens very quickly such as a balloon popping. Since 960fps can only be switched on in a short burst, it's easy to miss the moment.

The S9 has an auto detect function, so you can tell the phone where within the shot to watch for movement. As soon as it does, it will kick into the

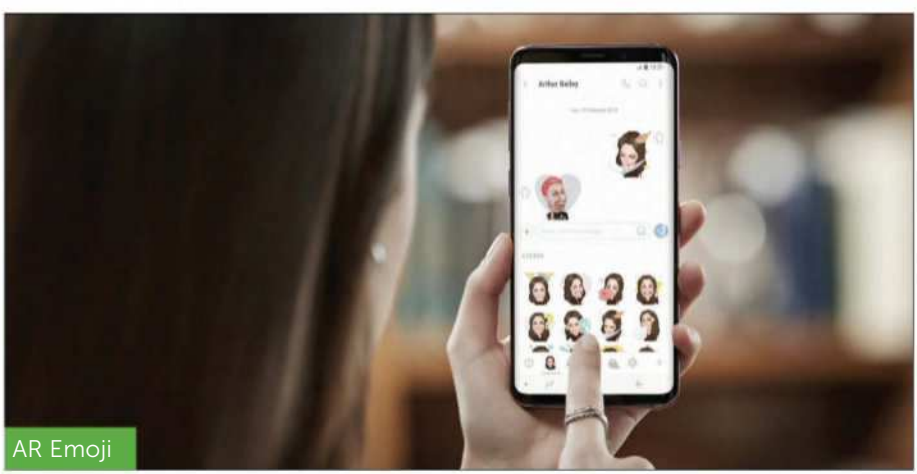
super slow motion. You can then share as a gif, do things such as reverse the video and even set it as a moving lock screen wallpaper. You can also shoot in manual mode, selecting when you want to do the slow motion shooting which is easier for some situations. In either mode, you can shoot 20 different slow-mo sections within one video.

Sony's new Xperia XZ2 phones might be able to do 960fps in 1080p, but we'd rather have the functionality offered by the S9 to make better content in 720p.

AR Emoji

There's more to talk about with the front camera, which remains at 8Mp with an f/1.7 aperture, but on the software side Samsung has created AR Emoji to provide users with something similar to Apple's Animoji feature.

Instead of the phone tracking your face to animate various animals and the like (although there are some



AR Emoji

to choose from), you take a photo of yourself and the S9 will create an emoji that looks like you.

It's quick and easy, though we're not exactly blown away with the likeness (and it cannot handle beards at all) – the three colleagues we got to try it were all given very similar characters. You can edit them a bit to help and choose from one that incorporates the selfie you took or a more cartoon option. Once you're done 18 animated gifs are automatically generated and you can send them to anyone, not just those who also happen to have an S9. They're pretty cool and easy to access via the default keyboard. However, one of the ideas is that you can animate the character yourself, but doing this is extremely glitchy and the emoji of you spends most of the time flinching. The tracking on the iPhone X is leagues ahead. It might be fun but let's face it, this is another gimmick feature just like Animoji.

Battery life

It's a shame the battery remains at 3,000mAh and Samsung has not made any claims on the subject. The Galaxy S9 will offer fast charging via the USB-C port and with wireless charging, though. With the supplied charger, we managed to charge the S9 from 0- to 36 percent in 30 minutes. That's pretty good, although the HTC U11+ beats it slightly at 38 percent.

With no change in battery capacity, it's no surprise that the phone isn't going to last you any longer than before. The S9 will last a day of average usage and perhaps a little bit longer for light users. Fast wired and wireless charging will help you keep it topped up.

REVIEW

Software

As you would expect, the Galaxy S9 phones come with Android 8 Oreo and Samsung's own user interface. There's not a huge change in the way things work compared to before, but that's to be expected.

There are still preloaded apps from Google and Microsoft, but Samsung has made a few tweaks here and there to tighten up the experience.

For those using various different Samsung apps for other devices, you'll be pleased to know that there's now one app to rule them all. SmartThings is now the one place where you can manage all your devices and it will also do useful things like provide your new Samsung TV, for example, with the Wi-Fi details and logins to all your services.

There are improvements to Bixby – you can, for example, use the phone in landscape mode, whether you're browsing the home screen panels or your apps. When you are, notifications will pop up at the top, but in an unintrusive way.

There's also a new DeX dock (pictured opposite), so you can connect the phone to a monitor and use it like a PC. This time it's flat, so you can use the screen as a trackpad or even keyboard.

Verdict

We're going to have to wait for big jumps in technology, but although the Galaxy S9 only brings a disappointingly small bunch of minor improvements it's still an amazing smartphone that will be hard to beat in 2018. Samsung has expertly combined design, hardware and software to make a phone that will

The new DeX dock

appeal to all kinds of users. The incremental updates will mean S8 users might struggle to justify upgrading. However, those on an S7 or earlier Galaxy will notice a huge difference. But might want to simply grab the S8 at a lower price. **Chris Martin**

Specifications

- 5.8in (2960x1440, 570ppi) Super AMOLED capacitive display
- Android 8.0 Oreo
- Exynos 9810 Octa processor
- Octa-core 4x 2.8GHz Mongoose M3 and 4x 1.7GHz Cortex-A55 CPU
- Mali-G72 MP18 GPU
- 4GB RAM
- 64/128/256GB storage, microSD up to 256GB
- Iris/fingerprint scanner

REVIEW

- 12Mp rear-facing camera: f/1.5-2.4, 26mm, 1/2.5in, 1.4µm, Dual Pixel PDAF, phase detection autofocus, OIS, LED flash
- 8Mp front-facing camera: f/1.7, autofocus, 1440p, dual video call, Auto HDR
- 802.11ac Wi-Fi
- Bluetooth 5.0
- A-GPS, GLONASS, BDS, GALILEO
- Micro-USB 3.1 Type-C
- Non-removable lithium-ion 3,000mAh battery
- 147.7x68.7x8.5mm
- 163g

REVIEW

Sony Xperia XA2 Ultra

£379 inc VAT from fave.co/2pb7hk9 ★★★½☆

Sony makes good phones. Even some great phones. But it cannot escape criticism for its design language and large bezels.

This isn't because the bezels are actually that much of an issue. Big bezels do not a bad phone make. It's because Sony releases so many phones with such regularity that we, and other tech reviewers and consumers, end up getting disappointed at seeing the

same design every three to six months. The design itself isn't much of a problem.

But if you just hate on bezels (and many do), the Xperia XA2 Ultra won't make you happy. It's a pricier version of the XA2 that has more battery, a larger display and dual selfie cameras. Is that enough to ignore its unwieldy size?

Design

At the front, the Xperia XA2 Ultra looks pretty much identical to the previous model. The main giveaway that it's now comes via the two camera lenses in the top bezel. Looking at the phone from the top or bottom sees a subtle slight curved design, complete with bevelled edges. However, the remainder of the XA2 Ultra looks distinctly average and even dated. Granted, the screen goes right to the edges at either side, but the phone has hefty bezels above and below. The wait for an 18:9 bezel-free Xperia goes on.

Unless you have huge hands (and pockets) or simply love physically huge phones, the XA2 Ultra is too big. Previously, having a large 6in screen would justify its massive size, but we've rightly come to expect slim and light handsets, even in the mid-range.

The Samsung Galaxy A8 is in the same price range with a bezel-less design similar to the Galaxy S8, making the XA2 Ultra look fairly ridiculous by comparison.

It's not just about the looks though, it's also impossible to use one-handed. The Xperia XZ1 had big bezels but was slim, light and packed stereo front-facing speakers. The XA2 Ultra is very heavy and uses only its top bezel effectively, housing the headline dual selfie cameras.

The build quality on show is premium, and the metal design is robust, though the back is a textured plastic. Volume rocker, power key and the excellent dedicated shutter button are on the right side, while Sony has moved the fingerprint sensor to the rear for the first time, under the camera lens.

Thankfully for American Sony fans, the fingerprint sensor now actually works thanks to the end of a long-running legal battle. The camera also had a flash, as do the two front facing sensors. A speaker on the bottom edge accompanies a modern USB-C port. The XA2 Ultra amounts to a monolithic slab of smartphone, an unashamed brick of a thing.

It comes in the blue of our review unit, as well as black, gold and silver.

Hardware

As you'd expect, the XA2 Ultra is a bigger version of the regular model. However, there are more differences here than just a larger screen. The screen is exactly the same as the XA1 Ultra at 6in with a Full HD 1080p resolution resulting is a fairly poor 367ppi. That's a decent chunk bigger than the 5.2in XA2.

Despite the low pixels per inch, Netflix binges on the train look pretty decent. But you'll have to put up with its mad 221g weight, one of the only phones

we've reviewed recently that tips the scale over 200g. For comparison, the 6in screened Honor 7X is 165g.

It's nice to have a big screen, but you've got to really want it here to live with the size and weight of the phone, as the 16:9 aspect ratio makes it huge. The 6in screen on the recent Honor 7X is a slighter 18:9, looks great and costs £269.99 at the time of writing – £100 less than the XA2 Ultra.

The display settings hidden away do improve things though. Usually phones come with the saturation turned up, which is less natural but more attractive. You can turn on standard mode to boost it at little, or go all-out with super vivid mode. We prefer standard, but it's good that the option is there to bring some life to the natural but dull out of the box settings.

Unlike the MediaTek chip in the previous XA1, the XA2 Ultra has a Qualcomm Snapdragon 630 processor. A small upgrade on the power-efficient 625, the 630 here proved to give excellent battery life both in real world usage and the Geekbench 4 battery test, where it ran for an excellent nine hours and 57 minutes. The pairing of energy efficient chip and 3,850mAh battery proves solid. There's also NFC for mobile payments.

There's a tame 32GB storage on board, but you can expand with a microSD card up to 256GB. Some regions will get a 64GB option but both versions come with 4GB RAM, an upgrade on the regular XA2's 3GB.

As is the case for most phones in this price range, there isn't wireless charging or any form of official water or dust resistance rating. Despite this, the Ultra has a decent set of specs for the price.

Cameras

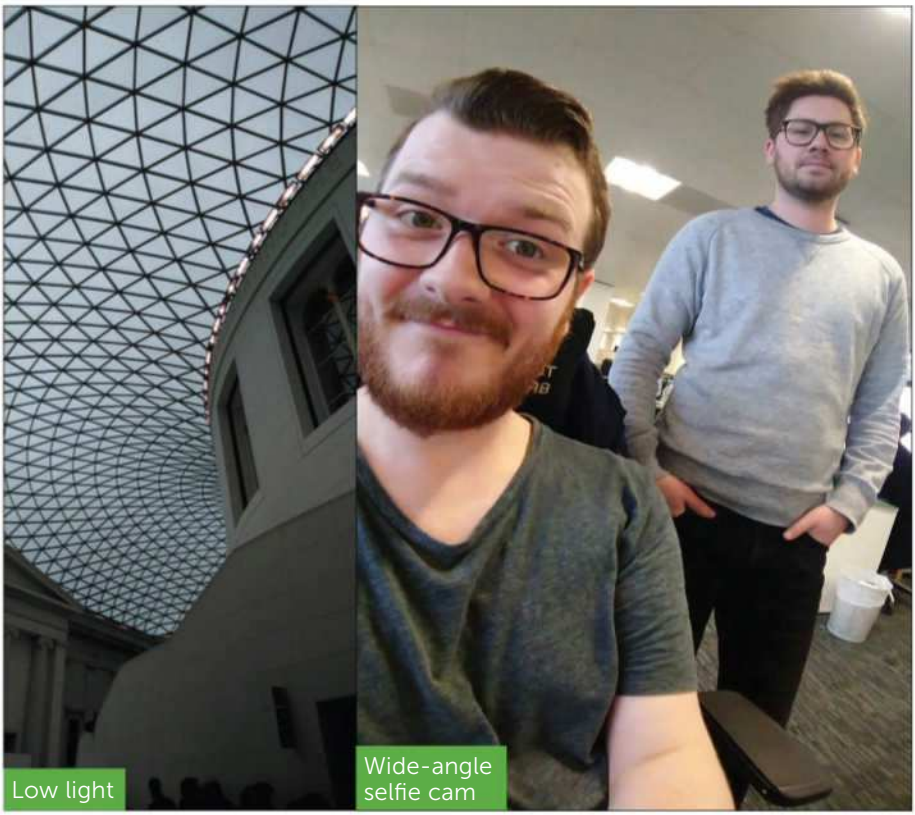
The rear-facing camera is a 23Mp Sony sensor with f/2.0 aperture, but the software processing doesn't take advantage of the megapixels. Unless you're in bright sunlight, the results are disappointing and muddy. Colour reproduction is often inaccurate too, though it can handle light well in landscape shots, even if the sky on the below photo is a little blown out.

Sony markets the Ultra as a phone for selfies as the two front-facing cameras allow for wide angle group shots, or just a way to get more of the background in. It's quite good but you get the fish bowl effect often seen at the edges of pictures taken with such a set up. You may also want to turn off the on-by-default skin softening mode.

A real boon here is the selfie cameras' optical image stabilization, something the rear camera

Landscape

REVIEW



actually lacks. It means your group selfie shots will be largely blur free, and it's good to see on the phone considering the price.

If you're into your selfies you will enjoy the feature, but there are better camera setups on other mid-range phones.

One nice-to-have feature is 4K video recording, unusual on a mid-range handset. The phone does struggle to process it though and lags considerably

during recording. The slo-mo recording feature from Xperia flagships has also been ported over for recording bursts of 120fps footage.

The added AR feature is fun to turn your living room into a prehistoric scene and the timeshift burst mode lets you select the best shot from several, handy if you have a moving pet or child to snap.

We still recommend spending more on a higher-end phone if photography is important to you. Despite Sony's insistence that the camera tech here is top end, it isn't quite. A better display and better software processing are needed such as on Google's Pixel 2 or the Huawei Mate 10 Pro.

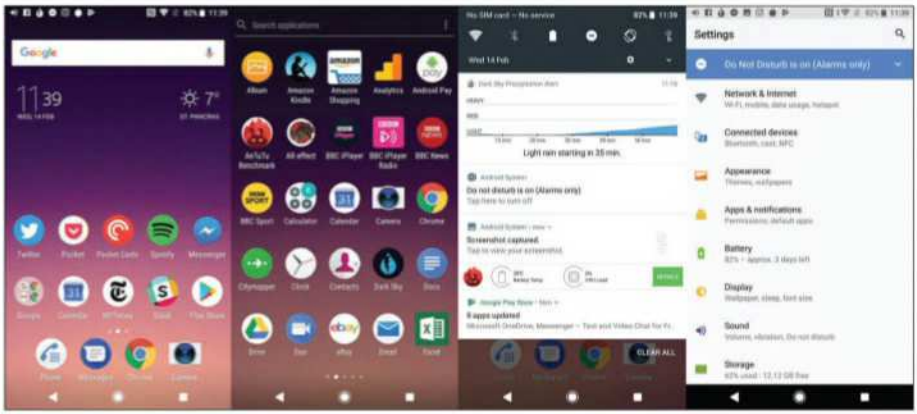
Audio

Where the XA2 Ultra does deliver is in its audio delivery. Though it lacks front facing speakers, the wired headphone experience on the phone is great. ClearAudio+ is a software setting that optimizes the sound output, making music and video brighter and more immersive. It's a surprisingly decent feature, but might not be to your taste if you prefer a compressed sound and isn't driven by a hardware DAC like on the (admittedly pricier) LG V30.

Software

Pleasingly, the XA2 Ultra comes with Android 8.0 Oreo on-board. This is excellent news for a mid-range device, and Sony has beaten tons of handsets double the price to get it. You can enjoy features like picture in picture and password auto-fill. Sony is also doing a good job at the moment with monthly security

REVIEW



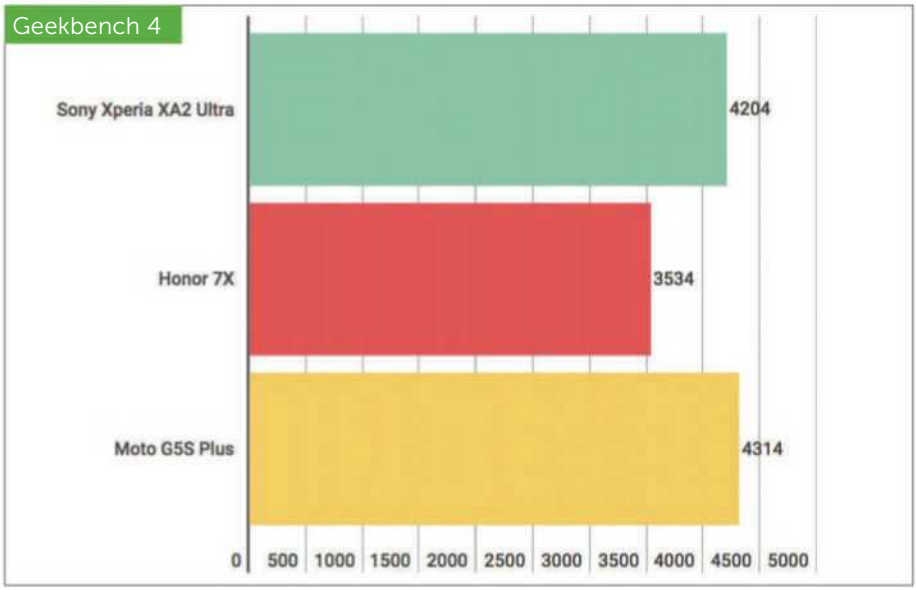
updates. Sony's Android skin is minimal, with only minor aesthetic changes to Google's stock version. It's very crisp and clean and doesn't make any change for change sake like Honor does with its EMUI skin. Sony still pre-installs and pushes SwiftKey on you, but we prefer to download and use Google's Gboard.

Performance

Opposite are benchmarks from the XA2 Ultra and some comparable phones. The Ultra is a solid choice for mobile gaming, though if that's the reason you're looking to buy you will want to spend a bit more on a high-end phone.

Casual gaming looks great, and the extra money you will pay compared to the Honor 7X (with its Kirin 659 chip) or the Moto G5S Plus (with the older Snapdragon 625) will be worth it.

Multi-tasking is also fluid even when using many apps or when in split screen mode but the phone can lag when shooting and playing 4K video.


Geekbench 4
Sony Xperia XA2 Ultra
4204
Honor 7X
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Moto G5S Plus
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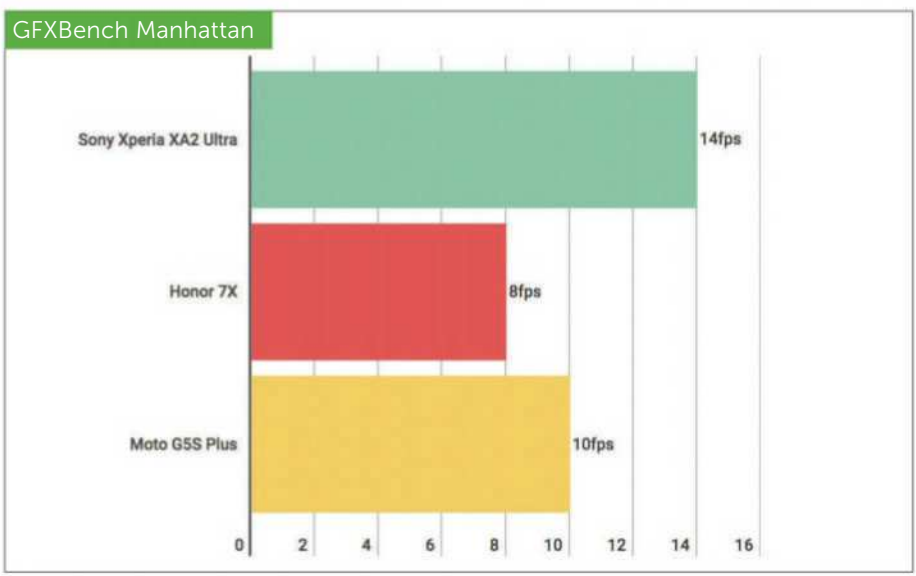
GFXBench Manhattan
Sony Xperia XA2 Ultra
14fps
Honor 7X
8fps
Moto G5S Plus
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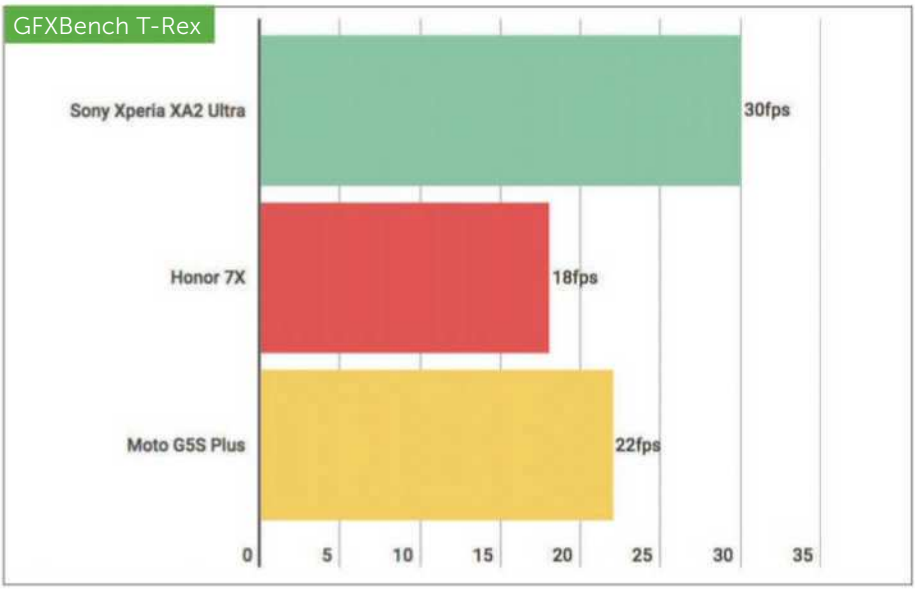
REVIEW



Verdict

The Sony Xperia XA2 Ultra is a weird phone. Sony could have made a svelte mid-range Xperia at a lower cost than its flagships, but has instead made a £379 chunky mess. You can get the XZ1 for £449 in the UK now, and we strongly recommend that phone over this one. If you really want a 6in 16:9 screen, then the XA2 Ultra is one of the only ones on the market and its performance is solid. The rear camera is acceptable and the audio quality, run by Android Oreo, is top-notch. But with cheaper mid-range phones like the Honor 7X boasting more compact 18:9 6in displays, the huge XA2 Ultra is a phone that will only appeal if you love the design, its audio quirks, and have a pocket big enough to fit it in. **Henry Burrell**

Specifications

- 6in (1920x1080, 367ppi) IPS LCD capacitive display
- Android 8.0 Oreo
- Qualcomm SDM630 Snapdragon 630 processor
- Octa-core 2.2GHz Cortex-A53 CPU
- Adreno 508 GPU
- 4GB RAM
- 32/64GB storage, microSD up to 256GB
- Fingerprint scanner
- 23Mp rear-facing camera: f/2.0, 24mm, 1/2.3in, phase detection autofocus, LED flash
- Dual front-facing cameras: 16Mp, f/2.0, 23mm, 1/2.6in, OIS, AF, and 8Mp, f/2.4, 1/4in
- 802.11a/b/g/n Wi-Fi
- Bluetooth 5.0
- A-GPS, GLONASS
- Micro-USB 2.0 Type-C
- Non-removable lithium-ion 3,580mAh battery
- 163x80x9.5mm
- 221g

REVIEW

Huawei P Smart

£229 inc VAT from fave.co/2pF3ZWy ★★★★☆

Huawei traditionally goes for mid-to-high-end smartphones and leaves the more budget versions to its sub-brand Honor. With the P Smart, though, it's now well into budget territory.

It has an 18:9 screen, a decent processor and dual rear cameras, plus the latest version of Android along with Huawei's new EMUI 8.0 software.

Design

In 2017, 18:9 screens were the new fashion, but now it's clear that you can have one even if your budget won't stretch to even a mid-range phone such as

the Honor 7X. Check the specifications (page 57) and you'll note that the P Smart is pretty much just a slightly smaller, lower-spec version of the 7X.

Starting with the screen, it's 5.65 inches across, with a 2160x1080 resolution. That gives it a decent pixel density of 428ppi, which means everything looks nice and sharp. Colours, contrast and brightness are all decent, too.

In the usual Huawei tradition, there's a factory-applied screen protector to keep the display scratch-free, but there's no case in the box. Instead, you get some basic headphones along with a USB mains charger. There's a standard headphone socket on the bottom edge along with a mono speaker and a Micro-USB port.

The tall screen leaves no room for a fingerprint sensor, so that's on the back. With many phones taking

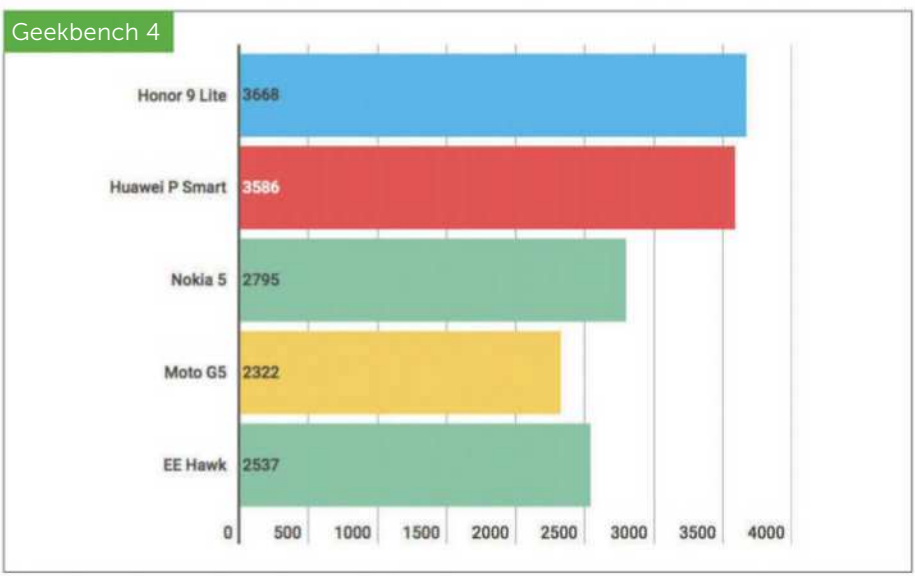
REVIEW

this approach, it's becoming the norm and it's easy to adapt: your finger falls naturally on the sensor when you pick up the phone.

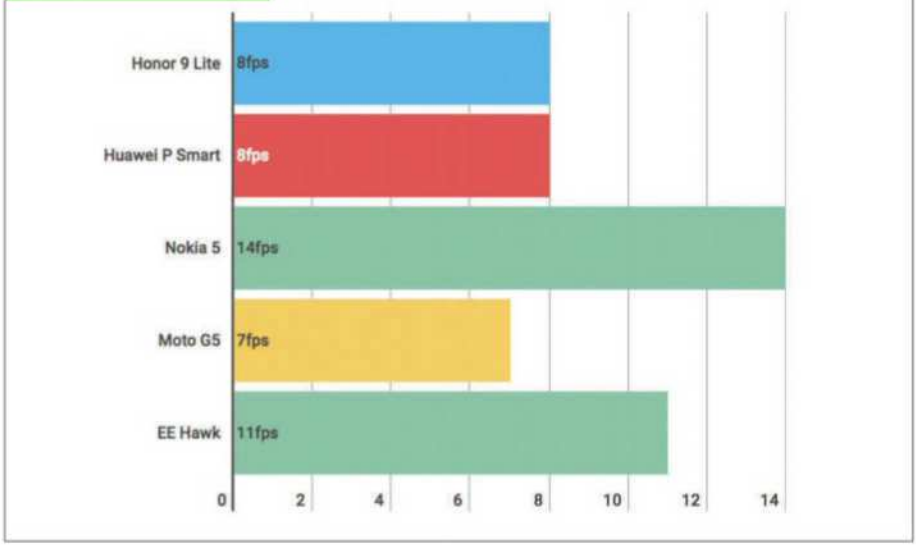
Unlike the extremely similar Honor 9 Lite, the Huawei P Smart is a single-SIM phone rather than dual-SIM, but it still has the slot for a microSD card to bolster the 32GB of on-board storage.

RAM is the same at 3GB and the processor is also identical: the Kirin 659. That chip is also used in the Honor 7X, so performance is – as you might expect – largely the same.

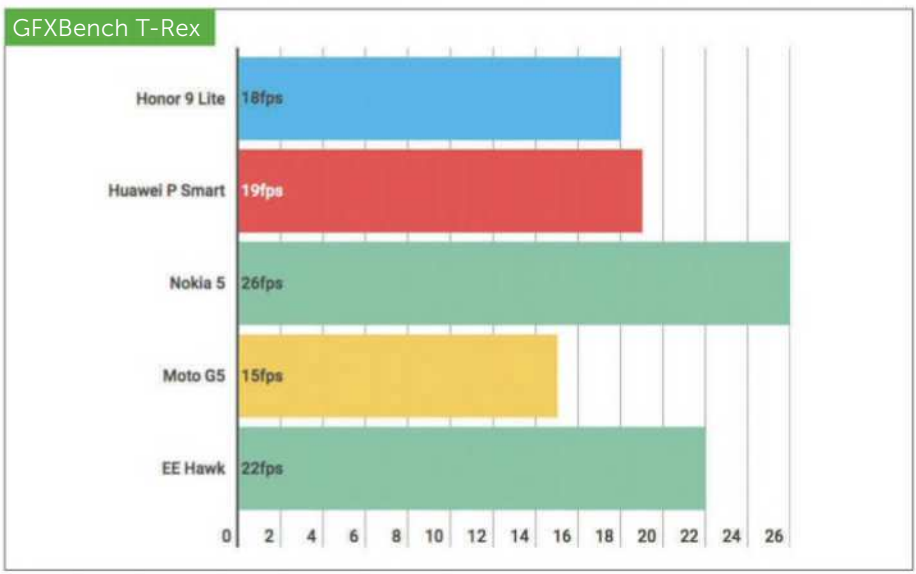
This means it's no speed demon: expect to wait four- to five seconds for the camera app to load and for there to be a delay when switching between apps. Once an app is running, however, performance is generally fine and you won't notice any lag or



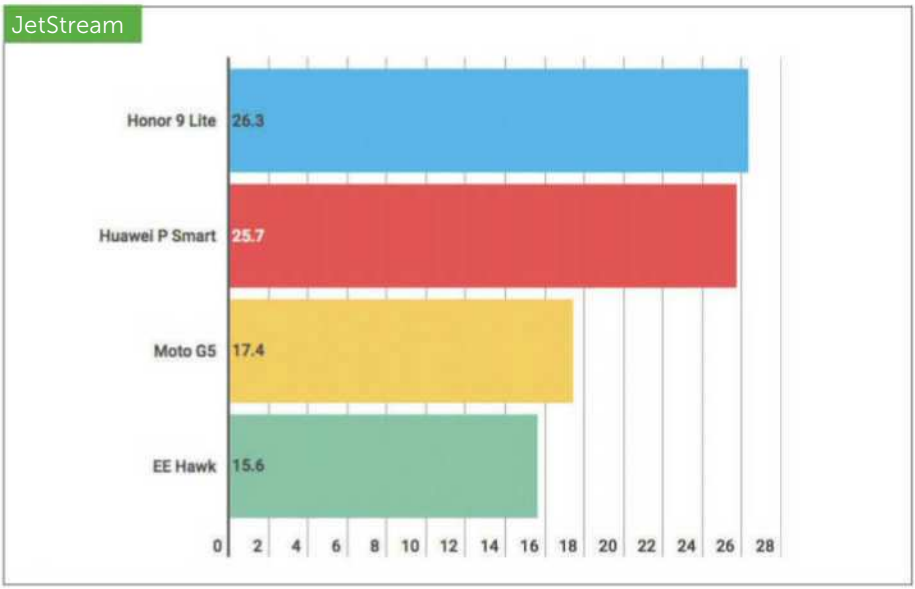
GFXBench Manhattan



GFXBench T-Rex



REVIEW



sluggishness. It's the same for games: the P Smart will happily run games such as Pokémon GO smoothly with no jerkiness. You'll never see high frame rates from benchmarks such as GFXBench's Manhattan test, but that doesn't mean it can't run most games at an acceptable speed.

In terms of connectivity, you get GPS, Bluetooth 4.2, 802.11n Wi-Fi (just 2.4GHz single-band), and NFC. Unsurprisingly at this price, there's no water resistance.

Cameras

The dual-camera setup is much like Honor's: you get a 13Mp main shooter with a secondary 2Mp camera whose only function is to supply depth information: it's not for taking photos.


Dual camera setup

It does mean that you can take portrait photos with blurred backgrounds, as well as a 'wide aperture' effect, which does the same thing when you take landscape pictures.

Around the front there's a single 8Mp camera: you don't get the secondary front camera as you do on the Honor 9 Lite. So you can't take depth-effect selfies on the P Smart. There is a Portrait mode when using the front camera, but using it makes no noticeable difference.

Video capabilities are somewhat limited compared to more expensive phones. The maximum resolution is 1080p at 30fps and there's no stabilization to speak of.

It can track objects, but that's about the only extra video feature you'll find. Oddly, there's a Pro Video

REVIEW

mode that allows you to focus manually, choose the white balance and change exposure settings. We can't imagine many owners using any of these options, though it's always nice to have more control.

There's no slow motion, but you can select light painting (great for fireworks) and time-lapse. HDR is, sadly, also a dedicated mode and won't be enabled automatically for photos.

In any case, the cameras aren't wonderful. Selfies are perfectly acceptable, as are some shots from the rear camera in good light. However, zoom in on some photos and you'll be disappointed at the lack of sharpness. This photo looks fine when zoomed out,

Standard shot

but the tree and building are actually quite blurry (see following image).

At night, the camera does a decent job of keeping noise at bay: the sky is inky black. However, the lack of detail in the building means there is plenty of noise reduction going on.

Annoyingly, the depth effect doesn't work on every shot you attempt. Out of five attempts, the P Smart only successfully blurred the background on one: the others had no bokeh at all.

Software

It's good to see Android 8.0 Oreo, and we also happen to like Huawei's EMUI 8 overlay. It won't be to everyone's tastes as it defaults to an iOS-style home screen. Hunt around in the settings though, and you'll find the option to enable the app drawer, so you don't have to keep all your apps across several home screens. EMUI adds quite a few useful features, too. You can enable gestures such as double touch to turn the screen on or off and double-press volume down to launch the camera app. Then you can wave (or just hold up your palm) to automatically take a photo. It also optimizes memory use in various ways to keep Android running as smoothly as possible and offers lots of battery-saving options.

The Google Assistant is just a swipe away from the first home screen and you get a fantastic photo on the lock screen which changes each time you wake the phone. The wider screen lends itself to split screen and you can use this to run two compatible apps side by side in landscape mode.

App twin is a feature we've seen on Huawei and Honor phones, and the P Smart gets it, albeit only for Facebook. It means you can sign into two different accounts on the phone at the same time.

Battery life

The 3,000mAh battery is fairly standard for a large-screen phone such as this. Huawei doesn't quote any usage figures, but we found the P Smart would last a full day with normal use. You'll certainly be charging it every night, but unless you're using GPS heavily or

playing a lot of intensive games, you shouldn't need to carry a power bank around with you for any top-ups.

Verdict

With a decent 18:9 screen, the P Smart is a fine Android phone that should appeal to anyone looking for a cheap contract phone. However, the fact it's so similar to the Honor 9 Lite (which costs £30 less when bought SIM-free) makes it hard to recommend, especially as the Honor has a couple of extra features – dual SIM and a second front camera – which the Huawei lacks. **Jim Martin**

Specifications

- 5.65in (2160x1080, 367ppi) IPS LCD capacitive display

REVIEW

- Android 8.0 Oreo
- HiSilicon Kirin 659 processor
- Octa-core 4x 2.36GHz Cortex-A53 and 4x 1.7GHz Cortex-A53 CPU
- Mali-T830 GPU
- 3/4GB RAM
- 32/64GB storage, microSD up to 256GB
- Fingerprint scanner
- Dual rear-facing cameras: 13- and 2Mp, autofocus, LED flash
- 8Mp front-facing camera: f/2.0
- 802.11a/b/g/n Wi-Fi
- Bluetooth 4.2
- A-GPS, GLONASS, BDS
- Micro-USB 2.0 Type-C
- 150.1x72.1x7.5mm
- 165g

REVIEW

Fossil Q Commuter

£159 inc VAT from fave.co/2I55PXw ★★★★☆

A bit like smartphones, smartwatches haven't changed much over the last few years despite being a much newer category. We've had all kinds of problems, particularly with battery life so hybrid devices have quickly become a great alternative. Fossil's Q Commuter is a particularly stylish yet useful wearable.

Design

We really liked the old-fashioned vintage style of the original Q Grant (which now has a new design we're slightly less keen on), but the Q Commuter

has a more sleek and modern look. You can also get the Q Nate for a more rugged outdoors sort of style, among others.

The Commuter features a 42mm metal body that comes in silver, gold, rose gold or black – all neatly matched with a leather or metal strap. The leather strap is good quality and it's quick release, so you can change them easily for a 22mm alternative.

The body is fairly large and is 13mm thick so won't suit those with smaller wrists that well – the Q Neely is a better option if so. It's made from stainless steel and the watch carries a 5ATM waterproof rating, so it's fully submersible in water up to 50m.

What's nice here, compared to the original Q Grant, is that the back of the case is metal rather than plastic.

The watch face has a brushed metal finish and we like the simplicity of the design, yet the flashes

of orange provide some contrast. Note that different models come with different colour faces.

You'll notice two buttons and crown on the side, but the crown is actually a button – you use the app to adjust the hands if needed. These are easy to use and can do all kinds of things, we'll explain next.

Hardware

It's easy enough to set up the Q Commuter with a phone as you simply download the app and follow the instructions. We did have an issue where the watch performed an update straight away, but the app couldn't find it afterwards so we had to pair a second time.

The quick start booklet in the box simply tells you to download the app (for iOS or Android), but we wish we had more information on how to use the watch as the app doesn't do a great job of explaining everything.

Like the Nokia Steel HR and similar watches, the Q Commuter has a secondary dial that shows your step count progress. You can see exact numbers in the app as well as sleep tracking if you don't find the watch uncomfortable to wear in bed.

The left side of this dial is where the Commuter gets clever, though. It's split up into four sections: Alert, Date, Alarm and Time 2. By default, pushing the middle button on the crown cycles through the modes, but you need to set some up in the app before they will do anything. This isn't clear and we had to figure it out for ourselves. There's also a stopwatch which we had to work out with trial and error.

REVIEW

The alert function will be the most helpful as you can get notifications via your phone. When you get a notification on your phone, the Q Commuter will vibrate, the second dial will move to 'alert' and the main hands will move to point at an hour.

You can customize what the hours – 1 to 12 – mean in the app and they can be an alert for a specific contact, general calls or texts, or a notification from a specific app. The trick is remembering what you set each one to – something you'll just have to learn over time using the watch.

The three buttons on the side can also be set by the user to do all kinds of things, although you'll probably need to leave the middle one as mode select.

They can control music playback, take a photo (via your phone), show your commute time and more.

Since there are lots of different combinations available, you can save presets so you can quickly change all three for various situations.

What would be handy is the ability to set more than one function to each button, with a long- or double-press, or even both. You are stuck with just one per button, though, so making use of the presets is your best option.

Battery life is the bane of the technology world and it's especially difficult to move to a smartwatch, which may only last a day or two, when you're used to a regular watch lasting months or years.

The beauty of a hybrid smartwatch is that it consumes a fraction of the power compared to a full smartwatch. We can't say for sure about Q Commuter battery life because the watch can last up to a year.

One thing is for sure, it will last a lot longer than a regular smartwatch. You can check the battery level in the app and it's easily replaced with the supplied tool and an inexpensive CR2430 button type battery.

Verdict

If the screen and battery life of a regular smartwatch doesn't appeal then a hybrid is a great alternative. The Fossil Q Commuter is an excellent example and the best we've tried so far. It's stylish, available in various finishes, with top-notch build quality at an affordable price. It's not the most intuitive system, but once you get used to it, the Commuter handles tracking, notifications and more pretty neatly. **Chris Martin**

REVIEW

Specifications

- Android 5.0+, iOS 9+
- Bluetooth 4.1
- 42x13mm stainless steel case
- Accelerometer
- Activity and sleep tracking
- Alerts, alarm, date, stopwatch, time zones
- 22m quick change strap
- 1-year battery life
- CR2430 battery

Huawei P20

£599 inc VAT from fave.co/2GuhL87

The P20 is one of two new Huawei phones launched in Paris in March along with the P20 Pro. We went hands-on with the P20 prior to the event to see what Huawei is doing differently in 2018 for its flagship P line of phones after last year's impressive Mate 10 Pro.

Design

The P20 is a radical design departure from last year's P10. Where there was once sandblasted aluminium

HANDS-ON

and bezels there is now glossy colourful glass and a pesky notch for the selfie camera.

The phone will be available in black, champagne gold, twilight, pink gold and midnight blue.

Gone is the headphone jack in favour of USB-C audio, though Huawei puts a 3.5mm headphone jack adaptor in the box. It's a flagship feature we'll have to get used to.

There's also a notch in the top of the 5.84in display – yes, like an iPhone X, but also like the Essential Phone and the Asus ZenFone 5. Like the absence of a headphone jack, notches are here to stay for 2018, with the OnePlus 6 also rumoured to have one.

Until manufacturers can put earpieces and cameras in slimmer bezels, then notches are the workaround in order to give the most screen to body ratio possible. Some will ask why more don't ape the Galaxy S9 design, which does seem to manage without a notch

pretty impressively, but clearly Huawei has preferred the 'eared' design here.

Huawei has kept the fingerprint sensor on the front of the device. With so many so-called bezel-less phones moving the feature to the rear, it's refreshing to see it on the front in a place that many prefer it.

The button is a slim pill shape to save space and makes unlocking on a table possible. This means less hand acrobatics in general to find a button you can't see on the back.

The phone has a great in hand feel and a premium air about it that eluded the P10. The glass, while fragile no doubt, is lovely and the in-hand feel makes this a desirable piece of kit where Huawei design was once overly practical and utilitarian.

Hardware

We first used the Kirin 970, Huawei's answer to the Snapdragon 845, in the Mate 10 Pro. Huawei makes bold claims about the chip's AI functions, and we are still dubious of any smartphone manufacturer claiming their products have AI capabilities. All that 'AI' really means in this instance is slightly cleverer software tweaks on top of apps like the camera.

Huawei says the camera app will intelligently select shooting modes for you, and you can image search Amazon from anywhere within the UI. Cool tricks, but not game changers – and we've seen it before.

More interesting to explore in our full review will be the AI-assisted stabilization on the P20's cameras.

The display you view everything through is a 2244x1080 18.7:9 LCD (bit of a mouthful), while you

get an impressive 128GB expandable storage. The P20 has to make do with 4GB RAM, with the P20 Pro getting 6GB.

Cameras

Even though it only has two lenses compared to the P20 Pro's three, the P20's camera setup is still impressive. There are 12- and 20Mp lenses (colour and monochrome respectively) though there's no OIS in sight – a shame on a flagship device in 2018. Only the 8Mp telephoto lens on the P20 Pro has OIS.

The selfie camera has also had a bump to an impressive 24Mp – just remember to turn off Huawei's still-annoying beauty mode unless you want to come out airbrushed.

Though not as equipped as the P20 Pro, the regular model should still be capable of some impressive low light and black and white

photography. It can also capture 4K video at 30- and 960fps slo-mo as seen on the Sony Xperia XZ Premium and Samsung Galaxy S9.

Battery

Huawei has stuffed a 3,400mAh battery into a phone that's only 7.65mm thick. That's impressive, and with Huawei's fast-charger in the box you can easily keep topped up if you're a heavy user. Huawei claims you can eke two days of use on the battery, but we remain unconvinced until proven in our testing.

Unfortunately, like the Mate 10 Pro the P20 does not support wireless charging – despite the glass back that can technically allow it. It's not a deal-breaker, but Huawei is clearly behind the pack now.

Other stuff

The P20 is only IP53 water resistant, unlike the IP67 P20 Pro. Like the LCD instead of OLED display, this can be seen as Huawei stripping back costs on the regular model to meet a price that appeals to the floating purchaser. The company claims the face unlock feature on the P20 is 100 percent faster than the iPhone X at 0.5 seconds, and works in the dark. Again, this will be tested in our review, as without the sensor array of the iPhone X, the P20 may struggle, as other Android phones do. It's also less secure when relying on image only.

Software

The P20 ships with EMUI 8.1 based on Android Oreo 8.1. Based on our time with the phone so far, it's an

improvement, though each incremental version of EMUI generally is.

Menus are becoming clearer, and the interface is relatively intuitive, though the skin is still heavy to the point of change for change's sake. But the notification shade is still good to use, and the granular controls within the camera app belie Huawei's continued focus on photography and the company's partnership with Leica.

Its decision to install Google's Messages app rather than its own is also a positive embrace of Google's often superior stock apps.

A neat addition carried over from the P10 is using gestures on the fingerprint sensor in place of on-screen Android navigation controls. Pressing to go home or back and swiping to open the recent apps page is surprisingly natural, and it opens up even more usable screen space.

The software here is less of a visual change and more additions of so-called AI smarts. New layers of artificial help will hopefully unveil themselves to us in full testing, something that doesn't happen in quick hands-on testing.

Verdict

The P20 will get ribbed for looking like an iPhone when really it is a massive step up in design for Huawei despite the similarities. EMUI has never looked better, and the twilight colour makes the phone quite desirable.

But although Huawei's design chops have overtaken rivals like OnePlus, the loss of a headphone

jack, no full waterproofing, an LCD screen and no wireless charging mean there is a lot missing from the P20 that can all be found in the Galaxy S9.

It's impressive hardware, but without the third camera of the P20 Pro, the regular P20 could be a hard sell when there are more feature-full options for you to buy at around the same price. **Henry Burrell**

Specifications

- 5.8in (2244x1080, 428ppi) IPS LCD capacitive display
- Android 8.1 Oreo
- HiSilicon Kirin 970 processor
- Octa-core 4x 2.4GHz Cortex-A73 and 4x 1.8GHz Cortex-A53 CPU
- Mali-G72 MP12 GPU
- 4GB RAM
- 128GB storage
- Fingerprint scanner
- Dual rear-facing cameras: 12Mp (f/1.8, 1/2.3in, 1.55µm, OIS) and 20Mp (f/1.6, 27mm), Leica optics, 2x lossless zoom, phase detection and laser autofocus, dual-LED dual-tone flash
- 24Mp front-facing camera: f/2.0, 1080p
- 802.11ac Wi-Fi
- Bluetooth 4.2
- A-GPS, GLONASS
- USB 3.0 Type-C
- 149.1x70.8x7.7mm
- 165g

HANDS-ON

Huawei P20 Pro

£799 inc VAT from fave.co/2GDEIWx

Rather than call it the P11, Huawei has decided to follow up the P10 with the P20. There are three phones in the range, a Lite version with a 5.8in screen, a 'standard' option (page 65), and a Pro model which is a little larger with a 6.1in display. It's the latter we're looking at here.

Design

The P20 is, just like the Mate 10, a redesign rather than an iteration of the P10. Perhaps that's one reason why it's the P20 and not the P11.

In any case, it has rounder edges than its predecessor but, more noticeably, a glass back. Without doubt it looks much better than the sandblasted aluminium of the P10 and comes in a range of colours including Twilight, which is a gradient from dark blue to a pinkish hue.

Photos can't quite do the finish justice, but in the flesh it's another eye-catching design that will make people ask "What phone have you got?". If you prefer, there's a black version, Pink Gold or Midnight Blue.

The other obvious feature that will get people talking is the third lens. It's the first phone to sport a trio of rear cameras, but it's slightly odd that one sits separate to the other two. We'll get to the details of those cameras below.

Around the front, there's a 6.1in screen, which has a similar design to the iPhone X as there's a camera and speaker in a notch at the top. Surprisingly, Huawei decided not to make the bottom edge bezel-less but instead cram a long, thin home button/fingerprint sensor there. It's great news for those who despise rear-mounted fingerprint sensors.

There's IP67 water-resistance but all you'll find on the bottom edge is a USB-C port, not a standard headphone socket.

Display

With a resolution of 2244x1080, the 6.1in display is even wider than the Mate 10 Pro, with an aspect ratio of 18.7:9. Unlike the regular P20, the Pro gets an AMOLED screen. This offers more vibrant colours and – subjectively – a little more brightness.

We've not had long enough with the phone to see how Android Oreo handles the notch, and we're sure it will depend on the apps you use as to whether you end up with a black border or the interface can use the full extent of the screen.

However, like the Mate 10 Pro you can enable the always-on option, so the clock is displayed when the phone is asleep.

Hardware

The P20 borrows the Kirin 970 processor from the Mate 10, but that's not really an issue since it's a very fast chip. On the P20 Pro, it's backed by 6GB of RAM and 128GB of on-board storage. It also has 802.11ac Wi-Fi with MIMO, Bluetooth 4.2 (not 5.0) and Cat 18 LTE for up to 1.2Gb/s download speeds, when they are available from your mobile operator.

Cameras

Cameras are a major selling point for the P20 Pro and Huawei didn't talk about a whole lot else at the phone's launch.

They're so important that the whole rear of the phone has been designed around the cameras, with the Huawei logo running parallel to the line of cameras so it's readable when you're taking a picture – or video – in landscape mode.

The left-most camera in this orientation is the 20Mp mono camera that Huawei has used for quite a few of its recent phones, including the P10. In the middle is a 40Mp colour camera and, on the right, an 8Mp camera with a 3x telephoto lens.

Those are some serious numbers, and you'll probably recall Nokia putting a 41Mp sensor in its 2012 PureView 808 phone (and later using it in the Lumia 1020).

While you can shoot photos at 40Mp, the P20 Pro defaults to 10Mp. This is to enable a 5x Hybrid Zoom mode which combines the three cameras and some clever processing to deliver some credible-looking telephoto shots at 10Mp.

Here's how that looks in the real world. The images here have been resized in Photoshop, but we have included 100 percent crops of the 3x and 5x photos below, so you can see the full level of detail captured.

HANDS-ON

3x zoom

100 percent crop of the 3x photo

5x zoom

100 percent crop of the 5x photo

It's certainly impressive, with the hybrid mode delivering sharper results than you might expect, and better than simply interpolating a 3x photo in Photoshop to make it larger.

Camera features don't stop there. There's a nifty six-second long exposure mode, which uses AIS (Artificial Intelligence Stabilization) and ISO right up to 51,200 to deliver sharp night shots without a tripod. The Kirin 970's NPU (Neural Processing Unit) is used along with all the camera hardware to eliminate blurring caused by shaky hands.

And while it sounds too good to be true, it actually works. We tried it in an almost pitch-black room with a cityscape projected in the background and, although we could only review the images on the phone's screen, they certainly looked sharp enough.

We even compared this mode to an equivalent six-second long exposure in the Pro camera mode where we saw the expected blurry mess, so that AIS is clearly doing a lot. You can't select anything above ISO 6400 manually, though: the highest 102,400 ISO is only used when needed in the Night Shot mode.

In our low-light comparison, the long-exposure shot has more saturated colours and is clearly sharper than the standard auto mode (see opposite).

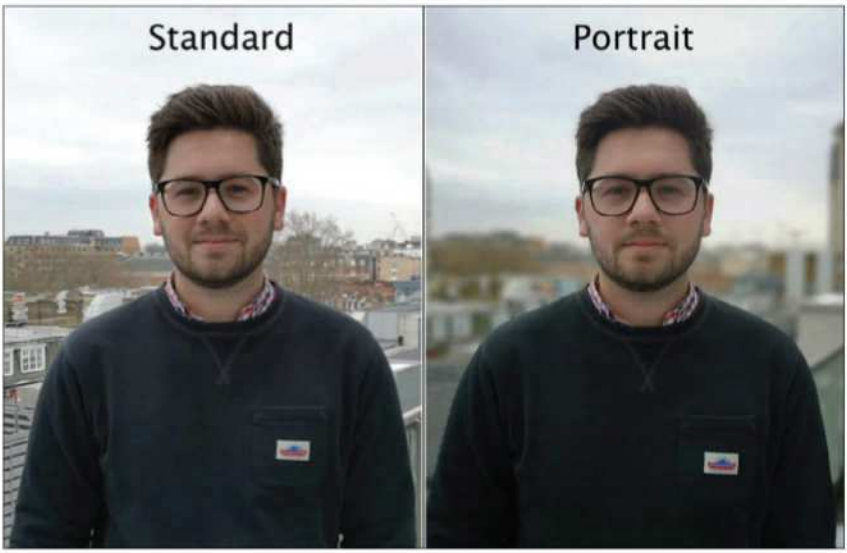
On top of this, the Ultra Snapshot (where you double-press the volume down button to take a photo even if the phone is asleep) now takes just 0.3 seconds, so you can pick up your P20 Pro and capture whatever's going on at that instant.

Continuing with the AI theme, the P20 Pro uses '4D predictive focus'. It analyses movement in the

frame and predicts where the object will go next so – hopefully it's in sharp focus no matter when you hit the shutter button. We tried this out on a couple of fencers doing their thing and the phone picked one person and followed his movements. And for the most part, it accurately predicted the direction he would move next. Although the foils were blurry due to the fast movement, the fencer was – as far as we could tell from the preview – in sharp focus.

Another AI feature, as found on the Mate 10, is scene recognition. The P20 Pro can identify 19 different scenarios (6 more than the Mate 10) from food to pets to portraits and landscapes. In each, it will automatically adjust settings to get the best possible photo without you have to manually select the mode.

HANDS-ON



For example, if it detects you're taking a portrait, it will automatically blur the background using the depth sensing capabilities. Here's the difference between a standard photo and one taken with portrait mode. It doesn't perfectly mask out the background, but still does a decent job:

Huawei refused to say if the new AI features would find their way onto the Mate 10.

Opposite is a comparison of the 40Mp and 10Mp modes. You can see that there's very little processing done in the former, but in the latter there's plenty of sharpening and also HDR. Yet all we did between taking the two photos was change the resolution.

Around the front you'll find a 24Mp selfie camera. That's not a typo either: the P20 pulls no punches with its sensor resolutions. In our limited testing, it


40mp


10Mp

HANDS-ON

100 percent crop of the 40Mp photo

proved to be very impressive indeed, delivering the kind of sharp detail usually reserved for rear cameras. Huawei says this will step down in resolution as light deteriorates in order to maintain sharpness and reduce noise.

We're not done yet with the cameras: the P20 Pro also records video. It's almost as if this is an afterthought (just as with the P10 and Mate 10). We say this because although the AI stabilization is used for video, it's only at 1080p at 30fps. No stabilization is offered at all at 1080p60 or at 4K.

There's no support for HDR video recording either. It means that, for those who like to use their phone to make home videos, the P20 is unlikely to be the best choice.

However, Huawei has added a Super Slow Motion mode which – like the Galaxy S9 – shoots a second or

so of 960fps video at 720p. The implementation isn't quite as intelligent: you have to press the button at the instant the action happens. So as with the Xperia XZ1, it's a bit of a case of luck if you manage to capture the motion you wanted. It processes the video for a few seconds afterwards so you can't immediately shoot another clip, but the resulting video starts at normal speed, smoothly transitions to super-slow motion and then back to normal speed at the end.

Battery

Despite the thickness of 7.8mm, there's a 4,000mAh battery in the P20 Pro. Huawei hasn't quoted any battery life figures, but we'd be surprised if the phone can't easily last a day of fairly intensive use.

Anecdotally, a photographer who has been testing out the P20 Pro said that after three days of use, the AI had optimized battery life significantly to the point where 60 percent remained after an entire day of shooting.

Software

In the box, the P20 Pro ships with Android Oreo 8.1 and Huawei's EMUI 8.1 software.

If you already know Huawei phones and EMUI, you'll know exactly what to expect: little has changed compared to the Mate 10 or P10. It defaults to an app grid like iOS, but you can enable the app drawer if you prefer not to have all your apps plastered across multiple home screens.

There are a couple of improvements. One is that AI is used to tag photos for better searching. It can put

HANDS-ON

photos into one of roughly 100 categories. It'll also use algorithms to 'score' photos for aesthetic beauty, so you can easily see the 'best' photos you've taken. AI can also straighten wonky horizons.

If the notch bugs you, just choose the 'Hide notch' option in the settings and it disappears:

EMUI 8.1 brings wireless file transfers to a PC or Mac with no special software required. We couldn't test this out, though, and Huawei didn't go into detail about exactly how this works.

Similarly, the Huawei Clone app runs faster and can transfer data from your old phone up to 5x faster: 32GB of data can be "cloned" in 19 minutes ,according to the firm.

The wide screen lends itself to multiple apps and sure enough, you can run certain apps side by side (or one above the other).

Verdict

It's too soon to say whether the P20 Pro is a better choice than the Galaxy S9+ or other rivals. We still need to test the cameras more fully (and compare with rival phones), assess battery life and more.

Until then, early signs are promising – so long as shooting smooth, stabilized 4K video isn't your top priority. **Jim Martin**

Specifications

- 6.1in (2244x1080, 408ppi) AMOLED capacitive touchscreen display
- Android 8.1 Oreo
- HiSilicon Kirin 970 processor
- Octa-core 4x 2.4GHz Cortex-A73 and 4x 1.8GHz Cortex-A53 CPU
- Mali-G72 MP12 GPU
- 6GB RAM
- 128GB storage
- Fingerprint scanner
- Three rear-facing cameras: 40Mp (f/1.8, 1/1.7in, OIS), 20Mp (f/1.6) and 8Mp (f/2.4), Leica optics, 3x optical zoom, phase detection and laser autofocus, dual-LED dual-tone flash
- 24Mp front-facing camera: autofocus f/2.0, 1080p
- 802.11ac Wi-Fi
- Bluetooth 4.2
- A-GPS, GLONASS
- USB 3.0 Type-C
- 155x73.9x7.8mm
- 180g

ROUND-UP

Best Android VPN

Surf the web anonymously and get access to US Netflix in the UK on your Android phone or tablet. ASHLEIGH MACRO reports

If you want to surf the web privately and securely, even when you're out and about connecting to public Wi-Fi, a virtual private network (VPN) is what you're looking for. You can also use a VPN to access blocked content such as BBC iPlayer if you're outside of the UK, or the American version of Netflix. If you're looking to do so on your Android phone or tablet, you'll be pleased to hear that there are plenty of great VPN apps for Android.

Please note that it is against Netflix, BBC iPlayer and other blocked content's terms and conditions to access them using a VPN, so we advise you to do so at your own risk.

NordVPN

Price: From $2.75 per month (around £2)
URL: fave.co/2CSqdrT

Billed as the world's most advanced VPN, NordVPN claims to use double encryption to ensure that it is the most secure solution on the market.

Based in Panama, it is outside the jurisdiction of the '14-eyes' group of security information sharing countries, and as you'd expect from a reputable VPN company in a crowded marketplace, there's no logging of customer surfing habits. There's also the usual kill switch, which will kill a list of specified apps should the VPN tunnel collapse. Unlike some other VPN clients, you select the apps to kill from a scrollable list.

You'll be pleased to hear that NordVPN is very easy to use. Installation, in line with the other Windows VPNs reviewed here, is as simple as downloading and clicking on the installation package.

Run the installed client and login using your NordVPN username or email address and password. You'll then be asked whether you'd like to turn on CyberSec, which is a new part of NordVPN available to protect you against intrusive ads, malware,

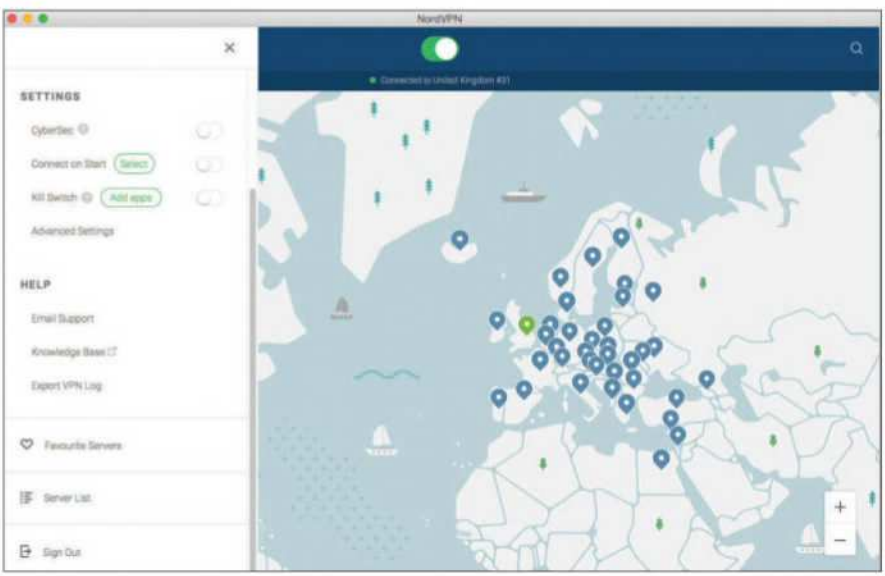
You'll then be asked whether you'd like to turn on CyberSec, which is a new part of NordVPN available

ROUND-UP

to protect you against intrusive ads, malware, phishing attempts and other threats. Essentially this is an ad blocker with some malware protection built in. We already have antivirus and prefer not to block ads as they are part of what keeps online content available to read for free, but for some this will be a hugely appealing additional feature. You can turn CyberSec on or off at any time.

Once you've chosen whether or not you want to start using CyberSec, you'll need to flip the switch at the top of the interface to automatically connect to the most efficient server.

You can also select a country from the zoomable map, with the client itself selecting the exact server to use. On the Android version, you can press and hold a location to open its server list and view load statistics.



Different servers will suit you best for different activities (Security, Streaming, P2P, and Anonymity). The Netherlands is best for P2P file sharing, for instance, but for anonymity the UK is best.

NordVPN used to use a handy search feature to help insure you find the best server for your needs, but now the VPN does that for you. It has a SmartPlay feature to automatically reroute you through a server that will unblock the content you're looking to view, such as American Netflix from the UK.

It's important to note, though, that watching US Netflix in the UK is against the terms and conditions of the service, so you should do so at your own risk. NordVPN is one of few VPNs that works in China and the Middle East, with the help of obfuscated servers.

Monthly fees are quite high, but the sheer number of servers should mean you get a rock solid service without connection delays, and prices drop rapidly if you're willing to commit to a longer contract. You'll also find that you can get Chrome and Firefox browser extensions for NordVPN at no extra cost.

You can currently get NordVPN for as little as £2/$2.75 per month if you take advantage of its three year deal, which totals just $99 (£70). Alternative options include a two year plan for £2.40/$3.29 per month, a one year plan for £4.15/$5.75 per month, or if you want to commit to just one month it's £8.60/$11.95. Nord accepts credit cards, PayPal and Bitcoin as well as Paymentwall, which is US-based.

Speaking of privacy, NordVPN can also connect to the Tor onion network directly instead of installing specialized software. Simply click the server list and

select Onion over VPN. Select a server as an entry point to the Tor network and click connect.

Verdict

A simple-to-use VPN solution with a huge number of servers to choose from. Tor access makes this attractive to serious privacy nuts and Netflix lovers too.

ExpressVPN

Price: From $6.67 per month (around £5)
URL: fave.co/2CSIwNF

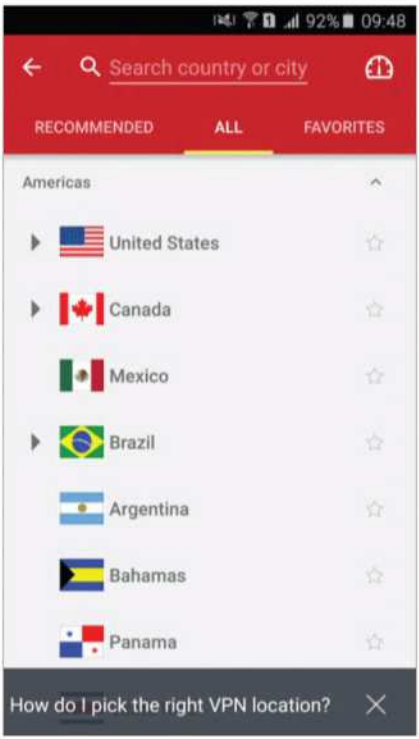
ExpressVPN is a simple but speedy VPN solution that offers anonymous web browsing and access to blocked content. The idea behind it is to grant anonymous internet access regardless of technical ability. Basically, you click the big button in the middle of the interface and within seconds you're protected from ISPs, governments and any other interlopers sniffing your computer's traffic.

At $12.95 (£10.50) per month or $8.32 (£6.70)/month when you pay by the year, ExpressVPN is one of the more expensive VPNs reviewed here, but for ease of use it does present value for money. There is an exclusive offer available right now, though, which will bring the price closer to £5 per month by offering you three months extra at no additional cost when you commit to a year.

The company also offers a free 30 days of use if you introduce a friend to the service and there's a 30-day money back guarantee too. Payment is by all the usual credit cards, PayPal, Bitcoin, and a wide range

of other options including GiroPay and YandexMoney.

The connection list currently runs to 145 cities in 94 countries, ranging from Monaco to Mongolia. The servers tested (there are 1,700 total) all seem rock steady and throughput was good.



To help you decide on a country and city, there's a built-in speed test facility. This takes around four minutes to complete because it contacts servers in all the listed countries. Unsurprisingly, the UK comes out on top for UK users, but there are also some surprisingly good speeds from unexpected places such as Armenia and Montenegro.

Unfortunately, the speed test is not available in the Android version, but with a licence that allows three devices to connect simultaneously, this isn't much of a problem.

In the help pages is a section about selecting the most appropriate server for online streaming. At the time of writing, a server we tried did indeed allow access to Netflix US-only shows. This mirrors the advice given by Support, which was quick and

ROUND-UP

efficient. We're advised not to publish the servers that work best with Netflix, as it may cause them to stop working and they change regularly, but 24 hour support is available should you struggle to connect.

The website states that no logs are kept that can be used by the authorities to identify end users, including DNS queries and browsing histories. ExpressVPN also runs its own DNS servers to prevent leakages to less secure servers.

ExpressVPN is based in the British Virgin Islands, which is a bit of a grey area when it comes to the '14-eyes' group of countries that share cyber-intelligence, but with zero logging this shouldn't be a concern. (You can find out more about why some users prefer their VPN service to be based outside of the 14-eyes here).

ExpressVPN provides software for domestic routers, too. This involves downloading specially modified firmware for the device and installing it, which some users may find a bit tricky.

It has a video that will give you an idea of the process required, so you can decide whether you think it'll work for you. Additionally, you can purchase

a router with ExpressVPN already installed. Like many other solutions, it also has a kill switch facility, called Network Lock, which focuses on traffic rather than applications. If the VPN tunnel collapses, all traffic stops, rather than applications being killed. You can also tune this feature to still allow local traffic while dropping all remote traffic, to prevent other devices such as printers from losing connectivity when the kill switch is activated.

In addition to all of those features, ExpressVPN has also launched a browser extension for Chrome and Firefox.

Verdict

A simple and reliable VPN that is ideal for lovers of streaming media who want to explore farther afield, and with a range of locations that should also keep privacy advocates happy.

PureVPN

Price: From $1.95 per month (around £1.40)
URL: tinyurl.com/y87pthdk

Billed as the world's fastest VPN, PureVPN promises to be a good option for anyone who wants to use a VPN to stream region-locked video, or wants online anonymity and security without sacrificing speed.

Being based in Hong Kong, PureVPN is outside the '14 eyes' group of countries that share user browsing data, but its association with China brings its own worries. On the flip side, there are more than 750 servers on the PureVPN network in 141 countries.

ROUND-UP

The company says the network is self-managed rather than cloud-based. Logging is restricted to the time at which connections are made, and nothing else.

Installation is as easy as any other Windows program. The main interface features several broad modes of use, similar to CyberGhost VPN.

Stream is obviously for streaming geoblocked media, and file sharing enables anonymous torrenting.

Online Privacy mode prevents ISPs using deep packet inspection of traffic for clues about your activities, while Internet Freedom mode lets people make calls in countries where VoIP is frowned upon.

If you select Stream, a long list of unlockable services pops up (including Netflix), or you can enter a search term. The Android version also lists Netflix US as an unlockable service.

Along with the usual kill switch to drop the internet connection should the VPN tunnel collapse unexpectedly, there are one or two cool features. For starters, there's an option to launch your default browser once a VPN connection is established.

Another feature is split tunnelling. You can set which apps use the VPN and leave all others to use your normal, uncloaked connection.

That way, if you live somewhere in which ISPs are monitored for VPN use, your VPN-tunnelled traffic can

hide among the unencrypted stuff using the special 'Stealth Protocol'. As with a similar facility in IPVanish, the idea is to disguise VPN packets as HTTPS traffic.

The interface isn't resizable on the Windows or Mac version, so the global server map is a pain to navigate. Individual servers are hidden, so there's only one clickable blob per country, meaning you also don't get a choice of, say, east coast or west coast USA.

We also had trouble running PureVPN on an older operating system, and the solution (albeit very speedily replied) was to use a very old and clunky version of the client. Other VPNs we've tried work well on older systems so this was quite disappointing.

At $9.95 (£7.15) per month for FIVE simultaneous users, Netflix US access makes PureVPN great value for the home user. The three-year deal works out at just $1.95 (£1.40) per month. The refund policy is strictly seven days, but you must use less than 3GB of bandwidth or have made fewer than 100 connections.

Verdict

A fast, reliable VPN for home streamers, file sharers and those wishing to use VoIP, but being based in Hong Kong will set alarm bells ringing for those looking for untraceable online anonymity.

IPVanish

Price: From £4.40 per month
URL: fave.co/2pG2C9V

IPVanish is a great VPN for beginners, but remains powerful and full of useful features for those that

want to browse the web anonymously or access blocked content.

After a simple installation, IPVanish reveals itself as the only solution we've reviewed that includes its own visual tutorial. This is clear, and explains the basics.

By default, IPVanish will try to select the best country and server based on the geographical location of your true IP address. Simply click the Connect button to begin using the selected server.

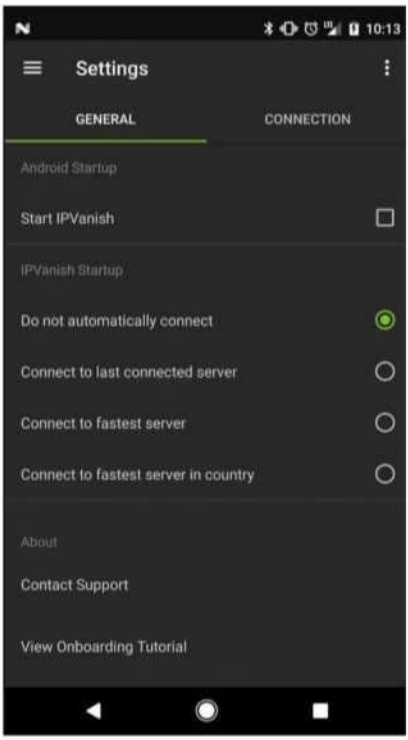
There's also a 'simple' mode you can select, which reduces the user interface to a much smaller window containing just a country selector, a city selector, and a button to start the connection. Connections are stable, and a handy traffic graph gives you an indication of bandwidth use.

Like many other solutions we've looked at, by default all DNS requests sent through the VPN will be resolved using the VPN provider's own DNS servers. This is important as it ensures that such traffic doesn't give clues about your surfing habits.

Also in line with other VPN solutions, IPVanish doesn't keep any connection or data logs, and doesn't store metadata about your VPN use.

For better privacy, IPVanish allows you to automatically change your fake IP address at regular, user-defined intervals, with a minimum interval of 45 minutes. This will interrupt the tunnel for a few seconds, but if you need a high degree of privacy the inconvenience shouldn't bother you too much.

There's also a kill switch to ensure that no data leaks occur when the connection is dropped and re-established.



Like Buffered VPN, IPVanish is based on OpenVPN, but has a more mature, professional feel. In testing, it also didn't suffer from Buffered VPN's slow user interface problems on Windows. Android installation and use is as easy as downloading from the Play Store and logging in.

IPVanish lists over 750 servers in 60 countries. A handy, zoomable map allows you to select a server cluster. At the time of writing, some servers allow access to Netflix US. There's also an option to disguise VPN traffic as HTTPS, which should help in cases where access is blocked.

It also has an option to install its software on certain models of home router. This involves installing new system software and is not for the technically naïve, though the online tutorials are very thorough.

As well as the basic $10 (£7.20) per month fee, there's a year-long plan that costs $6.40 (£4.67) per month or a three month option for $8.99 (£6.47) per month. Payment methods include credit cards, PayPal, and Bitcoin, and a wide range of more obscure options, such as Bancontact and Mister Cash.

There's also a seven-day money back guarantee and the agreement allows for up to five devices to be connected simultaneously. You can sign up here.

The downside is that IPVanish is US-based, and therefore in the top tier of the '14-eyes' countries that share cyber-intelligence. This will be a major turn off for privacy advocates, but with easy access to Netflix US, it's a winner for home users.

Verdict

A good looking VPN solution with ease-of-use built in. Netflix access will appeal to home users, but being based in the US will be a distinct turn-off for those worried about online privacy.

ROUND-UP

Best Android launchers

Android lets you change the way things look and feel by installing a new launcher. MARTYN CASSERLY reveals the best options

One of the best things about Android is the fact you can customize not only the way it looks but also how it behaves. One way to do this is by downloading a new launcher, an app that changes the stock interface with a shiny, new alternative. But, with so many to choose from, how do you decide which one to use? We've rounded up the best Android launchers for 2018.

ROUND-UP

What is an Android Launcher?

When you use an Android phone or tablet the part that you interact with – the icons, navigations buttons and some settings – are all part of the user interface that sits on top of the operating system.

Unlike with iPhones, on Android this can be replaced really easily by downloading a launcher app that opens up new visual styles, offers additional features, and allows you to tailor the look and feel of the layout to your own personal preference.

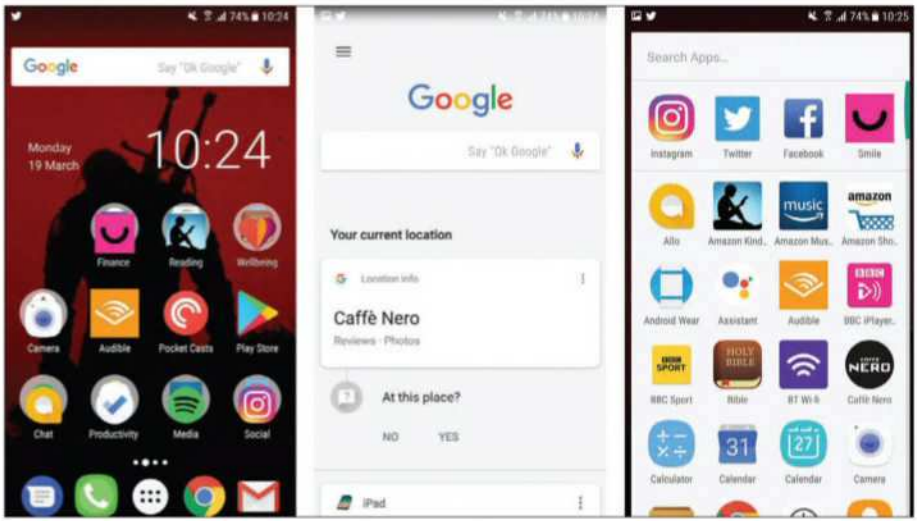
One of the real advantages of launchers is that they give you the ability to keep your phone the same even if you move between different manufacturers. Many offer free versions with limited functionality, but premium upgrades are usually cheap, plus they are non-destructive.

So, if you don't like what they do, you can easily swap back to the original launcher by visiting the Settings menu.

Google Now Launcher

Price: Free
URL: fave.co/2pD5R1Z

If simplicity is your goal, then the Google Launcher is one we'd recommend. Eschewing some of the fancier features you'll find in its rivals, this app gives you the pure, stock Android layout, just like you'd find on a Pixel, or the older Nexus handsets. The main Home screen has a central button in the dock to open the app tray. Swiping right will open up the Google Now/ Google Assistant page that holds various news items,



appointments, sports scores, plus other information that you can specify, and the Google search bar is a resident feature on each screen.

It's free, quick, and easy to use.

Nova Launcher

Price: Free (£3.99/$4.99 for Prime Upgrade)
URL: fave.co/2pGpGVY

Nova has long been the refuge of many an Android user that wants to customize almost every aspect of their interface. The app has an enviable reputation and supports a huge number of icon packs that are available on the Play Store. In the free version you can alter the general colour schemes, decide which way the app drawer moves, customize the dock to be scrollable or even contain widgets, and plenty more

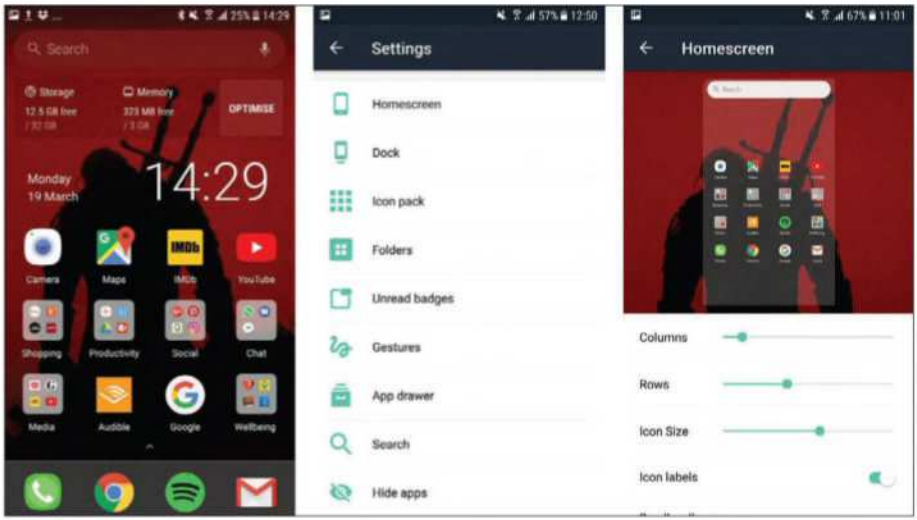
ROUND-UP

besides. Upgrading to Prime unlocks various gesture controls, tabs and folders in the app drawer, plus animation effects when scrolling between screens and other useful features. For all its options, Nova remains a well-designed and clean app that doesn't overwhelm or confuse. It's pretty nippy too.

Evie Launcher

Price: Free
URL: fave.co/2I44jVl

Another popular app is Evie. Much like Nova, it allows you to make wholesale changes to the arrangement of icons on the home screens, tailor the dock to your requirements, create folders, and plenty of other standard stuff. A universal search makes it easy to find numbers, contacts, apps, and pretty much anything



else on your phone, plus there's the incredible useful ability to create shortcuts to them by long-pressing on the results and dragging them to one of your home screens.

Best of all, Evie is free and regularly updated.

Microsoft Launcher

Price: Free
URL: fave.co/2pG980n

With Windows Mobile now consigned to the rubbish bin of technological history, you would be forgiven for thinking that Microsoft no longer has a horse in this race. Thankfully, that's not the case, as its new launcher is rather excellent.

A Bing daily wallpaper gives your device a fresh look each morning, and there's a screen to the left of

ROUND-UP

the main home screen that contains various calendar, news, weather, and other information cards just as in the Google Now launcher.

As you'd expect, there are settings for the dock, app drawer, and home screen that allow you to define how many things appear and the way they behave. It's not as customizable as Nova or Evie, but the design is so elegant that you don't find you want to change too much.

If you have a Microsoft account, and ideally a PC, you will find a number of cool and handy additional features in this app. These include being able to start reading a web page on your phone and then automatically continue on your PC (so long as you're running the Creators Update version of Windows), plus integration with a number of Microsoft apps, including Cortana.

Hola

Price: Free (ad-supported)
URL: fave.co/2I1Jv0T

The tag line for Hola is 'smaller, but bigger' and in many ways this is true. The launcher is quick, has plenty of character, and is somewhat quirky when compared to the others on this list.

On the lock screen for example there is a performance monitor that lets you know the current charge of the battery, RAM that is being used, and how much storage is available. These can be optimized by a Hola Boost, which kills idle apps and those draining the battery unnecessarily.

The news feed is very nicely designed, and makes it easy to select the sources you prefer, while blocking certain less desirable outlets. There are plenty of

interface adjustments that can be made, with icon sizes and labels, lock screen content, gesture controls, and other general tweaks.

Hola offers additional apps that can further enhance gestures, lock screens, and notifications, and the launcher does arrive with a few apps pre-installed.

The only real fly in the ointment are the ads that appear at various times. They're not horrible, but can feel jarring when you're moving from one function to another. Hola isn't for everyone, but it could certainly be fun to try if you're getting bored with your current choice.

FEATURE

State of Android security

Great on Oreo, but most phones are missing out, reveals MICHAEL SIMON

Google has released its annual report on Android security and the message is clear: The devices running the latest version of Android are among the safest you can buy. Through a combination of features such as Google Play Protect and Instant Apps, the bug bounty program, and machine learning, Google says Android 8 "has achieved a strength of protection that now leads the industry".

That's great news if you're using a Pixel or have a Galaxy S9 on the way. But if you have one of the

millions of phones that will never receive an Oreo update, the biggest issue with Android security is one that's plagued the platform for a while: fragmentation. At last count, just 1 percent of Android users were running Oreo on their phones, compared to nearly 28 percent each on Nougat and Marshmallow. That means nearly 99 percent of Android phones aren't as secure as they could be. But Google's trying to change that narrative.

With each new Android release, Google does more and more to make out phones secure. So, if you're one of the 1 percent using an Oreo phone, congratulations. Not only do you have the most recent features, you also have the safest Android phone you can buy. But Google is hopeful that it's turned a corner. With Project Treble and the Pixel, phones running the latest version of Android should increase exponentially with Android P, so this time next year there could be more than 10 percent of Android phones that are up to date. And there's also Android Go and Android One, both of which offer a "pure" version of Android with the promise of years of updates. So things are definitely looking up.

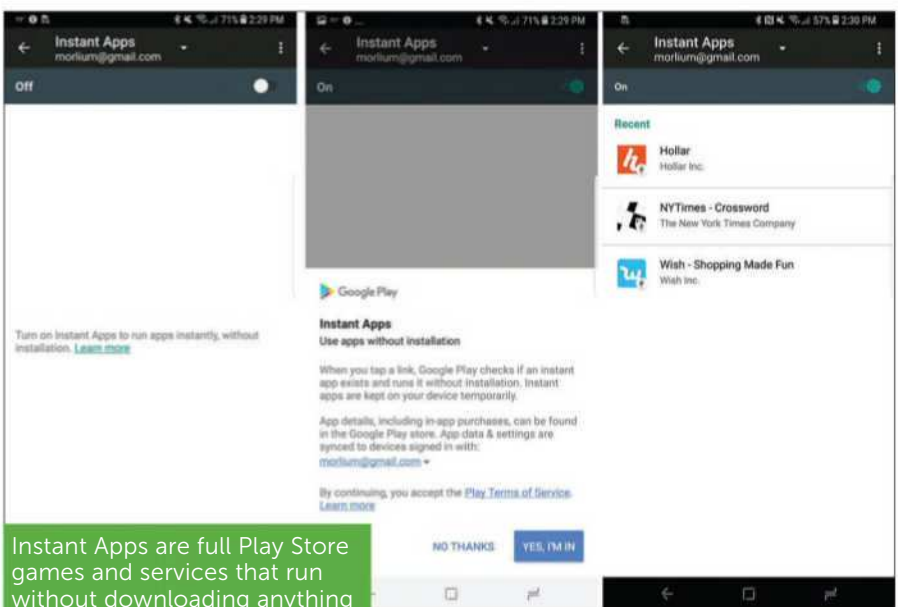
Protection at source

One area where all Android phones benefit from tight security is the Google Play Store. Last year, Google updated its digital storefront with a new security feature called Google Play Protect. A background process turned on by default, the security suite automatically runs a safety check on apps before they are downloaded from the Play Store and warns users

about any potentially harmful ones that could out your phone at risk.

According to Google, the probability of a user downloading a malicious app from the Play Store was sliced in half last year, from .04 percent to .02 percent. While the number was already extremely low, Google says that the odds of downloading a harmful app from Google Play in 2017 was "less likely than the odds of an asteroid hitting the earth". Additionally, the proliferation of Instant Apps – which can be used without downloading anything – keeps limits the likelihood of installing harmful code on your device.

While Google Play Protect and Instant Apps are available for phones going back to Lollipop, most of



Instant Apps are full Play Store games and services that run without downloading anything onto your phone

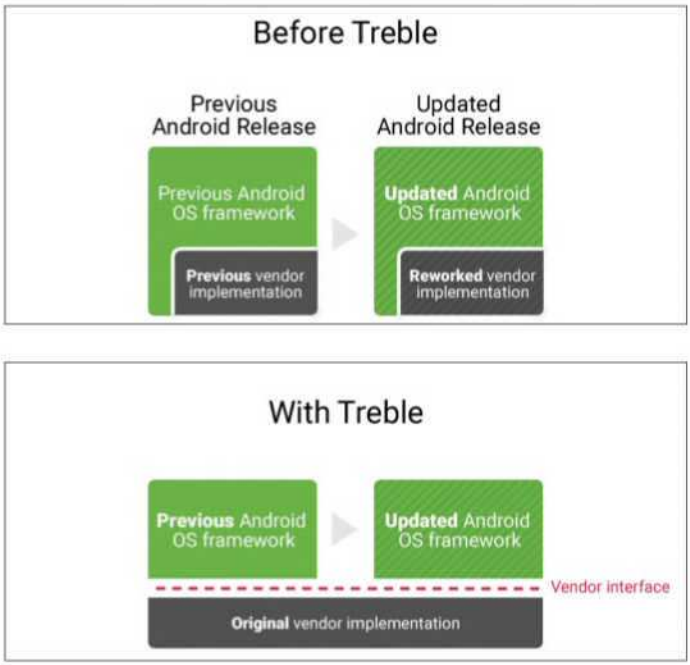
the other security enhancements Google delivered last year were mostly limited to Oreo. Among the features in the latest version of Android are stronger encryption and key storage, tighter sandboxing, kernel self-protection, and an updated version of Android Verified Boot.

But the biggest change in Android 8.0 security is to the handling of apps from sources other than the Play Store. Where users previously could easily access an Unverified Sources toggle to allow installations of non-Play Store-approved apps, in Oreo it's a behind-the-scenes permission that automatically runs whenever an app is side-loaded. The means users can't unwittingly turn it off, but it also means that a malicious app can't do it either.

Google also paid out more than $1.25 million as part of its bug bounty program, but very few of them critical Oreo vulnerabilities. In fact, Google reports, at the 2017 Mobile Pwn2Own competition, none of the exploits were able to successfully compromise Google Pixel devices. That event was held in October, however, after the phones received their Oreo update.

All about that Treble

Overall, things might be looking up. While Android updates generally follow the same slow adoption rate, Google's new Project Treble could ramp up the number of phones running Android P. The Oreo feature makes it easier for manufacturers to deliver updates to phones, so the phones running Android 8 should receive version 9 much quicker. That means everyone will be a whole lot safer.



Project Treble is a complete change to how update are delivered. Starting from the source, Project Treble gives manufacturers a clear way to update from Oreo to whatever Android P will be called, boiling down a multi-step process to just a single one. It also smooths over the various hardware tweaks, so Samsung will be able to push out updates to numerous phones, not just the Galaxy S9. Granted, phones will need to be running Oreo in order to take advantage of the new system, but it's a good start.

And that means next year's state of Android report could be a whole lot rosier.

HOW TO

HOW TO Set up Android Auto in any car

Skip the expensive infotainment system. An Android phone and a few accessories will do just fine, writes JARED NEWMAN

Android Auto will work in any car, even an older car. All you need is the right accessories—and a smartphone running Android 5.0 (Lollipop) or higher (Android 6.0 is better), with a decent-sized screen. Add a few handy apps and phone settings, and you can make your smartphone version of Android Auto just about as good as the dashboard version.

Android Auto wasn't always this easy. When it debuted in 2015, you needed either a new car or pricey aftermarket hardware to run Google's infotainment system of the future. Google brought a standalone Android Auto app to smartphones the following year, allowing anyone with an Android phone to use the simplified menu system for music, navigation, phone calls, and messages. More recently, Android Auto added support for Google Assistant and all the same voice commands you'd use with a Google Home speaker.

Step 1: Get a car phone mount

Using Android Auto on your phone makes sense only if you can glance at the screen without losing sight of the road. Car mounts for this purpose cost around £20, and can attach to your phone's dashboard, windscreen, CD player, or air vent.

In my case, I used a Breffo Spiderpodium Tablet (£24.99 from **fave.co/2pNpIM7**), whose bendable arms fit snugly into my Nissan's air vents. The remaining four arms cradle my Pixel 2 XL securely when it's inserted from above.

Step 2: Add Bluetooth to your car

Unless your phone needs charging, you shouldn't have to mess around with cables every time you get in the car. Connecting your car to Bluetooth removes the extra bit of friction that might stop you from listening to music or asking for directions.

If your car already has Bluetooth built in, you're in great shape. Just pair your phone through the car's

HOW TO

infotainment system, and proceed to the next step. Otherwise, you'll need some extra hardware to add Bluetooth to your car.

For cars with an auxiliary 3.5mm audio input, Bluetooth receivers are available for cheap. Mpow sells its Bluetooth Receiver (£9.79 at **fave.co/2I5UFS7**). though you may want to splurge for the Bluetooth 4.1 Receiver, which has a dedicated on-off switch. (The cheaper model requires you to press and hold a button to power it on, which is slightly less convenient.)

The receiver has a built-in battery, but you're better off keeping them connected to a car charger. RAVPower's tiny dual-USB car charger costs just £6.99

Mpow's receiver adds Bluetooth to any car with auxiliary input

at fave.co/2pHpiXw, and it allows you to charge the Bluetooth receiver via any Micro-USB cable. Use the second slot to charge your phone on long trips.

Don't have auxiliary input? You can still use a Bluetooth FM transmitter, which grabs audio from your phone and creates a short-range broadcast for your car radio. The most popular pick on Amazon is the Bluetooth Transmitter from VicTsing (£15.90 at fave.co/2I6uYRn), which has a dial for quickly selecting an open radio frequency. The car charger also has a spare USB slot in case your phone needs a boost.

Step 3: Automate Android Auto

Once you've got a Bluetooth solution and paired it to your phone, install the Android Auto app from the Google Play Store. But don't stop here. The real magic happens when you create a rule to launch Android Auto when it connects to the car via Bluetooth.

Launch the Android Auto app, then press the menu button in the top-left corner and select Settings. Scroll down and select Autolaunch, then flip on the toggles for Autolaunch and your car's Bluetooth connection. You may also turn on pocket detection so the app doesn't launch prematurely.

To make your phone feel a bit more like an actual infotainment system, you can run Android Auto in landscape mode. Because I normally keep my phone locked in portrait mode, I used a popular app called Tasker (£2.99 at fave.co/2pHEhkd) to automate the screen orientation. Download the app, then follow these steps:

- Under Profiles, press '+', then press State, then select Net, then select BT Connected.
- Under Name, press the magnifying glass, then select the name of your car's Bluetooth device.
- Under Address, press the magnifying glass, then choose your car's Bluetooth device again.
- Press the back button in the top-left corner, then press New Task
- On the Task Edit screen, press '+', then Display. Next, select Display AutoRotate, then select On from the Set menu. Hit the back button in the top-left corner, then press the back button again on the next screen.

Your phone will now automatically disable rotation lock when it's connected to the car. When the connection terminates, it'll return to portrait-only mode and exit the Android Auto app.

Finally, you can prevent the phone from feeding audio to the car at low volumes with the free Bluetooth Volume Control app. After downloading the app, add your car's Bluetooth with the '+' button, and set the volume to 100 percent.

Step 4: Get comfy with Android Auto

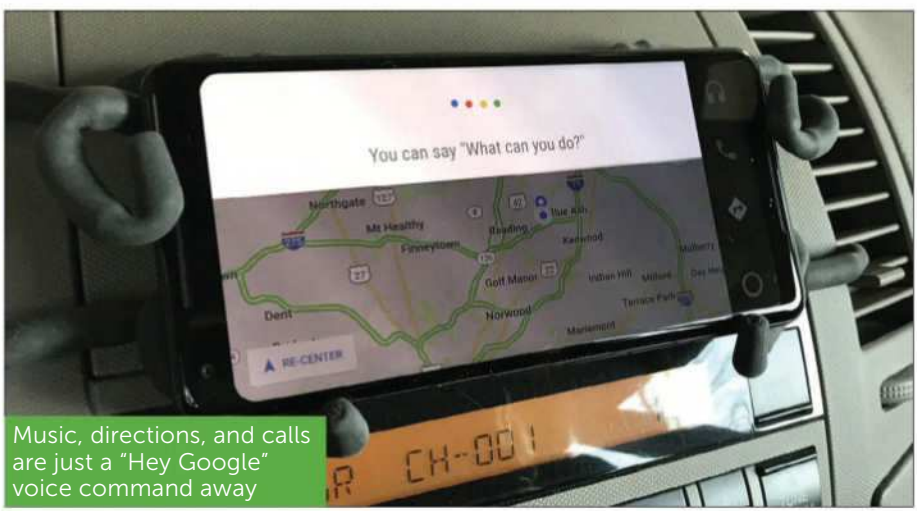
Android Auto is a special version of the Android interface, with larger buttons, simplified menu items, and fewer distractions. The headphone icon provides quick access to compatible music apps such as Pandora and Spotify, the navigation icon provides directions from Google Maps (or Waze, if you've installed it), and the phone button lets you place calls.

In many cases, though, it's easier to use voice commands. Hit the microphone icon or say "Hey

Google", then ask for music, directions, a phone call, or a text message. This works with all Google Assistant actions, so you can even dictate to-do list items, add calendar appointments, and turn down the thermostat at home.

One more thing: To curb distracted driving, Android Auto hides all notifications except phone calls and texts from supported messaging apps. For the latter, Google will only offer to speak the message instead of showing it on screen. You can then respond by voice or with a canned message, created through the Settings menu. (By default, it's 'I'm driving right now'.)

When you're finished driving, Android Auto should recognize that the Bluetooth connection has terminated and will exit the app automatically. But if not, tap the circle icon, then press Exit to return to your regular phone interface. Finally, don't forget to take your phone with you.



Music, directions, and calls are just a "Hey Google" voice command away

HOW TO

HOW TO Send a text using Google Home

Google Home might tell you it can't send a text message, but MARIE BLACK has found a way. Here's how

Regardless of what it tells you, it is possible to send a text message via Google Home using the free app IFTTT, as we'll explain below.)

There are a couple of catches to this method:

- All text messages are sent from the phone number of the primary Google account holder associated with your Google Home, regardless of whether you have

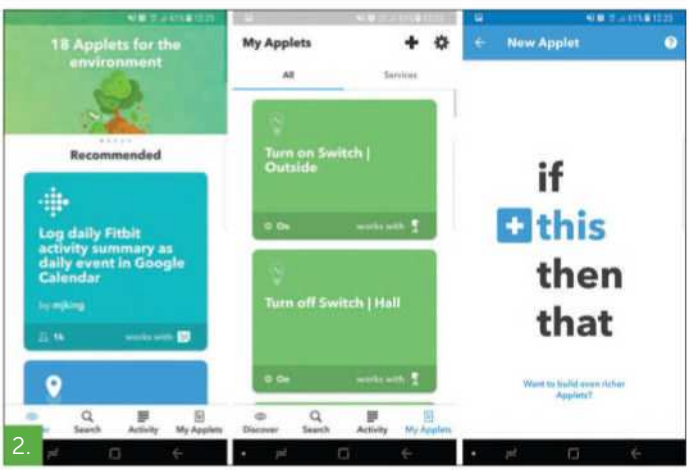
set up multiple user accounts. (This has led to some very interesting text conversations with myself.)

- You'll need to set up an IFTTT applet for each contact you want to be able to text, so it's best used for your most frequent contacts.

Send a text on Google Home using IFTTT

1. You'll need to download the free IFTTT app from **fave.co/2I83tar** and then either sign into an existing account or create one using your Facebook or Google account or your email address.

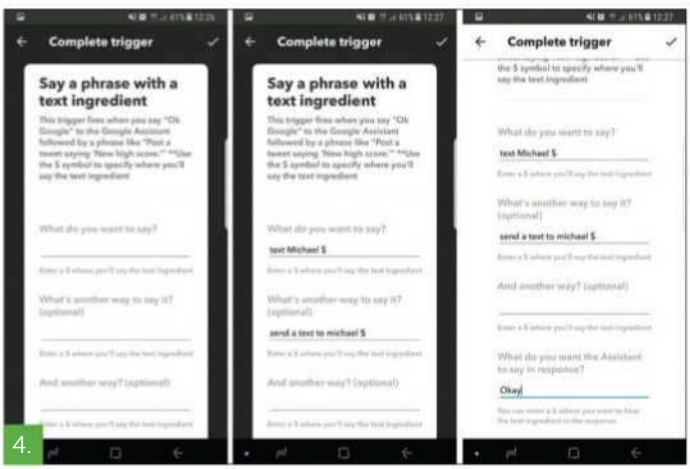
2. Select the My Applets tab at the bottom of the screen, then select the '+' symbol at the top of the page. Click on the blue link that says '+this'.



3. IFTTT will serve up a bunch of apps it can integrate with. Scroll down to and select Google Assistant. In the window that pops up choose 'Say a phrase with a text ingredient'.

HOW TO

4. In the text field below 'What do you want to say?' enter the phrase you will use as your command, for example 'Text Michael'. You might want to add a variation to this phrase, for example 'Send a text to Michael' which you can pop in the field below. In both cases end your phrase with the $ symbol. This tells IFTTT that more information will be given in place of this dollar symbol. At the bottom of the page you can specify a response Google Home should say in order



4.

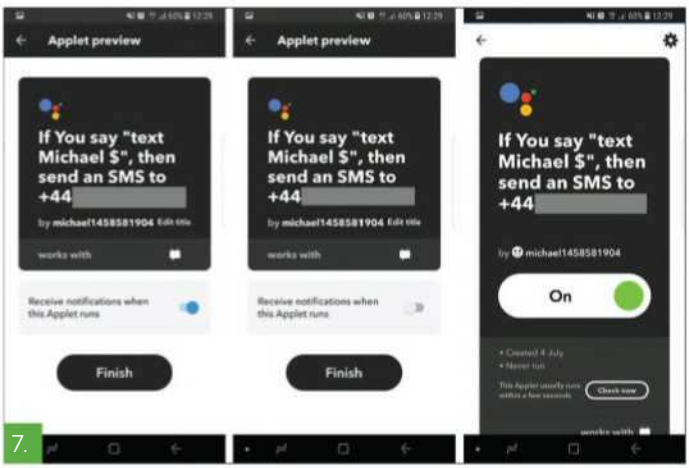
to confirm it has understood your request, for example 'Okay', then tap the tick icon at the top of the screen.

5. Now choose the blue link that says '+that' and scroll down to and select Android SMS. When prompted to select an action, choose 'Send an SMS'.

6. Enter the phone number to which you want to send the text message, including the country code. The field below this should be prefilled with the message 'TextField'; if it is not then you did

not select the option to 'Say a phrase with a text ingredient' in Step 3. Tap the tick icon at the top of the screen when you're done.

7. IFTTT will provide a summary of your applet. Disable the slider to 'Receive notifications when this applet runs' (unless you particularly want to get a message



every time someone uses it), then tap Finish. You will be given the option to 'Check now' to ensure you have set up the app correctly.

8. In order to send a text message from Google Home, you now simply say "Okay Google" followed by the phrase you specified in Step 4. In our case, we say "Okay Google, text Michael." You should then immediately relay the message you want to send – if you pause too long Google Home will tell you it doesn't know how to do that yet. It should respond with the message "Okay" or whatever you specified in step 4, then send the text message to your contact.


IDG