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Android is open source, so developers can take its code, add features, and build their own operating system images for Android phones and tablets. Many Android geeks install such custom ROMs — but why? “ROM” stands for “read-only memory.” A custom ROM replaces your device’s Android operating system — normally stored in read-only memory — with a new version of the Android operating system. Custom ROMs are different from acquiring root access. Get The Latest Version of Android This is by far the most popular reason to install a custom ROM. Many manufacturers never update their older Android phones and tablets or updates may take months to reach phones thanks to carrier and manufacturer delays. If you have an older device that isn’t receiving updates anymore and you want to run the latest version of Android, a custom ROM is just the ticket. CyanogenMod is the most popular ROM for this purpose — it has its own tweaks, but the base system is similar to the stock version of Android created by Google. Thanks to CyanogenMod and other custom ROMs, many older devices that will never be officially updated can run the latest version of Android. If your device is still receiving timely updates — especially if it’s a Nexus device that Google is updating regularly — custom ROMs won’t be anywhere near as compelling. RELATED: Why Your Android Phone Isn’t Getting Operating System Updates and What You Can Do About It Replace Manufacturer Skin With a Stock Version of Android RELATED: Why Android Geeks Buy Nexus Devices Manufacturers like Samsung and HTC “skin” their versions of Android, replacing the clean look Google created with their own look that’s often more cluttered and less cohesive. Many people don’t like this but still want to use a flagship phone like the Samsung Galaxy S4 or HTC One. You can’t just switch from the manufacturer’s skin to the stock Android look — sure, you can replace the launcher without installing a custom ROM and even without rooting, but there’s no erasing all the questionable customizations the manufacturer has made to the operating system. To get the stock Android look and replace all the manufacturer’s customizations with the clean Android system, you’ll need to install a custom ROM. If you don’t mind your device’s skin or you’re using a Nexus device that already comes with a stock Android system, there’s no reason to do this. Eliminate Bloatware RELATED: How Carriers and Manufacturers Make Your Android Phone’s Software Worse When you purchase a phone from a carrier, it often comes packed with bloatware. NASCAR apps, TV apps, a Contacts app that stores your contacts on your carrier’s servers instead of on your phone — these apps can clutter your system and waste disk space. Manufacturers even add their own software before the carrier gets to it, so you have two companies each adding their own bloatware to your phone before it gets to you. If you want to actually erase these apps from your disk, the best way to do so is to install a custom ROM. You can disable the apps without rooting, but this won’t free up the disk space they consume. Add Additional Features and System Tweaks Custom ROMs offer features not found in stock Android and many tweaking options you can’t get elsewhere. For example, a custom ROM may allow you to: Install skins to customize how your entire Android operating system looks. Customize the quick settings menu Android includes to add your own most-used settings shortcuts. Run apps in tablet mode on a phone, using a more full-featured tablet interface for certain apps. Easily overclock your device to make it run faster or underclock it to make it run slower while squeezing out more battery life. Disable the volume warning that Android constantly shows when you increase the system volume while headphones are plugged in. Hide the bottom navigation bar (on-screen buttons) to get more screen real estate. Easily enable root access by toggling a system setting. Custom ROMs offer many other features — this is only a snapshot of what you can do with such low-level access. RELATED: Forget Flashing ROMs: Use the Xposed Framework to Tweak Your Android Some of these tweaks may be possible on a typical Android device with a solution like the Xposed Framework, which allows custom ROM-like tweaks with only root access. However, custom ROMs are further along in development and include these features in a single package. Configure App Permissions Custom ROMs often include a way to manage Android app permissions, so you can prevent Facebook from tracking your GPS location and play Android games without giving them your phone number and other identity information. This feature showed up in Android 4.3 as a hidden settings panel, so we can only hope that it will appear in an official version of Android soon. Reasons Not to Install A Custom Android ROM Custom ROMs aren’t perfect and they can have downsides — depending on the ROM, your device, and how well the ROM supports it. You may run into: Battery Life Problems: The custom ROM may not be as optimized for your device and may drain battery faster than the device’s official ROM. Hardware Issues: Custom ROMs may not properly support every bit of hardware in your phone, so you may run into bugs, non-functioning hardware, or just other issues. For example, the device’s camera may not take pictures quite as well as it did on its official ROM. Bugs: The custom ROM hasn’t been tested by your manufacturer and carrier, so you may run into other bugs specific to your device and ROM. You could also experience system instability, with apps force-closing and the phone randomly restarting itself. Custom ROMs are also more work than just purchasing a device and having it be officially supported and updated by the company you purchased it from. That’s why many Android geeks buy Nexus devices, which receive timely updates directly from Google. CyanogenMod is trying to change this by offering an easier installation process via a CyanogenMod app in Google Play. RELATED: How to Flash a New ROM to Your Android Phone If you’re looking for a custom ROM and don’t know where to start, check CyanogenMod’s website and see if it supports your device. You can also check the XDA Developers forum for your Android device and find custom ROMs developed specially for your device, which can be helpful if you have a less common device. Be sure to find a ROM that appears to be stable and well-supported if you go this route. Image Credit: Jon Fingas on Flickr, Johan Larsson on Flickr Redmi Score: 75/100Date tested: June 2020 £162.00Available from: amazon.co.ukKey specificationsScreen size: 6.53inProcessor: MTK Helio G85 Cameras: 48MP AI quad rear camera,MTK Helio G85 13MP front camera Storage space: 128GBWeight: 199gWhat is it?The Note 9 belongs to Xiaomi’s Redmi range of affordable smartphones. It’s the most inexpensive of the Note 9 series. It runs on Miui 11, an operating system based on Android, so has easy access to all of the Google apps. There’s a 6.53in display and 128GB of storage. You can make contactless payments and there’s a fingerprint sensor for added security. GHI expert verdictIf you need an affordable smartphone with a great camera, the Redmi Note 9 is definitely worth considering, and it looks pretty sleek too.The goodThe camera took great selfies and sharp, vibrant shots in natural light. It even managed to take clear photos in low light. There were also plenty of camera modes to make shots look even better. In our video playback tests, the battery lasted over nine hours. It fully recharged in an hour-and-a-half as well. We also loved that it came with a case in the box for protection against knocks and bumps.Take noteOn test, this smartphone proved to be quite slow at opening apps and browsing the web, and it doesn’t have facial recognition or wireless charging. You’ll also have to be careful not to have any accidents as this handset isn’t waterproof.RatingsEase of use: 4.3/5Design: 4/5Instructions: 3.5/5Performance: 3.6/5How we testWhen testing smartphones, we test the boot-up time and processing speed to see if launching apps, playing games and web browsing can be done with less lag. We evaluate the call quality, camera performance, speaker sound quality, how responsive the screen is and how long the battery lasts when playing videos.All product information provided by the manufacturer is correct at time of publication. Backup data > install TWRP > find ROM > download build. On GApps site, pick a platform, version, and size.Download and transfer all to your device > reboot device into recovery. Select power to boot into TWRP.Next, select Wipe and perform a factory reset. On TWRP home page, select Install and follow prompts. This article explains how to install a custom ROM on a rooted Android device using the popular recovery utility TWRP. Before you begin, you’ll need a rooted device with an unlocked bootloader. You won’t get far without both, and you risk damaging your device. Before you begin, back up everything. This process will delete your text messages, contacts, settings, and just about everything else. The files on your device should remain, but it’s a good idea to back them up anyway. Android ROMs are flashed through a system recovery utility. The most popular recovery utility is currently TWRP, an excellent option with a simple interface and touchscreen support. Before you go any further, install TWRP on your device. Now that you have TWRP installed, it’s time to look for a ROM. If you don’t know which to choose, LineageOS is a fantastic place to start. Head to the LineageOS download page in either your desktop or Android device’s browser. If you choose to download to your desktop, you’ll need to transfer this file and the others to your phone. Locate your device manufacturer. On Desktop: On the menu to the left of the window.On Mobile: Tap the three lines at the top of the window to reveal the side pane. The menu will expand to show you the available device models. Locate and select your device. After you select a model, you’ll be presented with a list of the available builds for that device. Select the latest one, and download it. Don’t unpack the ZIP file. TWRP installs the zipped archive. You’re going to need the Google Apps (GApps), which doesn’t come with LineageOS or any ROM and needs to be installed separately. First, go to Open GApps project, which provides everything you need in a convenient ZIP file that you can install with TWRP. Select the platform that your device is based on. If you’re using an Android device made within the last five years or so, select ARM64, as it’s probably the right choice. To be sure you’re choosing the right platform, go to the LineageOS Wiki and search for your device. The Architecture will be listed under the picture of your device. Select the Android version you plan to install. The table below will show you the versions of Android as they correspond to LineageOS. Android Versions Android Version LineageOS Version Android Codename 10.0 17 Android 10 9.0 16 Pie 8.1 15.1 Oreo 8.0 15 Oreo 7.1 14.1 Nougat 6.0 13 Marshmallow Select the size of the package you want to download. If you’re not familiar with this, select Stock to get the default Android experience. If want the bare minimum to get access to the Google Play store, select Pico. When you have everything in order, select the red download icon to begin your download. Optional: If you plan on rooting your device again, you can use Magisk to manage the root permissions. If you aren’t familiar, Magisk is a powerful tool to root your device and manage which apps get root access. Go to the Magisk Github page and download the latest ZIP file release. If you downloaded everything on your desktop, transfer it all to your device now. You can do this over USB, Wi-Fi, or however you’re most comfortable. Place all of your files somewhere you won’t have trouble finding them. If you did everything from your Android device, you can skip this step. You’re going to need to reboot your device into recovery. Search for your device in the LineageOS Wiki and look under the Special boot modes header to find the button combination you need to reboot into recovery. Power your device down completely, then hold the key combination while booting to enter recovery. Your device will boot into a screen showing the Android mascot laying down. Use the volume controls to cycle through the list of boot options until you reach Recovery mode. Select the power key to boot into TWRP. Your device will take a few seconds before arriving in the TWRP home screen. You’ll see a list of available options in two columns. Select Wipe. At the bottom, swipe the slider to the right to perform a factory reset. After the reset, select Back to return to the Wipe screen, then select the back arrow to return home. Now, select Install on the TWRP home page. In the Install screen, you’ll hopefully see your ZIP files listed. Otherwise, use the file navigator in the top section of the screen to locate them. Either way, select the LineageOS ROM first. TWRP will take you to a screen letting you know you’ve added your ROM to the queue to flash. Select Add more Zips. Back on the Install screen, select your Open GApps zip next. You’ll arrive at the same type of screen as when you added the ROM. If you chose to include Magisk, select Add more Zips and add it. If not, move ahead and Swipe to confirm the flash. TWRP will spring into action, flashing your ZIP files in order. Depending on your device, this may take some time, so be patient. When it’s finished, select Reboot System. Before the device reboots, TWRP will ask you to install the associated app. Swipe to install that, too. It will take a bit longer for your device to fully reboot this time because it’s setting up everything from scratch. Once it does, you’ll need to go through the entire new device setup process again, including signing in to your Google account. Your device should now be running a custom Android ROM. Android ROMs are simply alternate versions of Android, with some containing different apps by default, while others contain modified kernels. Almost all ROMs include functions not available from your device manufacturer, and also provide a blank slate to build your system around, completely free from needless bloatware and apps you can’t install.

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