makeuseof

take control: android rooting guide

by Alexander Cordova

by Alexander Cordova

Published September 2013

Table Of Contents

1. Introduction 4

2. Android Terminology 101 5

3. Do I Really Need to Root? 14

4. The Risks of Rooting 15

5. How To Fully Back Up Your Android Device 16

6. Getting your Root On 19

6.1 Quick and Painless Rooting with “SuperOneClick” 19

6.2 UnlockRoot 21

6.3 What If I Can’t Use Either SuperOneClick or UnlockRoot? 22

7. I’m Rooted, Now What? 23

7.1 A Brief Overlook at the Most Popular ROMs 23

8. Apps for Rooted Users 26

9. Sites for Further Information and Discussion 28

1. Introduction

As of the writing of this guide, approximately 80% of the world's population owns their own cellphone. Out of those, 1.08 billion are smartphones.

If you're reading this guide, chances are you either took a wrong turn on Google or you're one of the proud legions of users that have incorporated their phones into nearly every aspect of their day-to-day life. You probably shopped around quite a while trying to find the best deal, perhaps read some reviews, quizzed your friends about which model they thought was best, and at some point amidst all that, you must have stumbled with the term "Rooting" and quickly dismissed it as some tech mumbo-jumbo; who has time to mess around with a perfectly good smartphone that can already handle everything you throw at it?

As time goes on, however, newer and more demanding apps along with Android OS updates leave you with a "need" to update your phone. You might want to stop, however, and take a moment to consider the not-so-complicated choice of getting the most out of your beloved phone by "Rooting" it – before trading it in for a sexier, younger model.

Rooting will essentially allow you to tap into your phone's full potential by giving you complete, unrestricted access to all its settings: the kind of things manufactures don't want you messing around with in case you end up causing permanent harm to it. But if you actively sought out this guide, we're confident you're the kind of user that can handle that bit of extra responsibility.

The possibilities that rooting opens up are almost endless – you'll be able to block annoying ads within your apps, boost your phone's flimsy sound, enable free Wi-Fi tethering despite your carrier's limitations, and (the best part) keep your OS up to date regardless of whether the latest versions of Android have been officially released for your phone. You can even test out user-builds, designed for enhanced performance.

Throughout this guide we'll mainly be using the term phone, but as you surely know there's a wide variety of Android devices available (tablets, e-readers, netbooks, watches, consoles, etc). Given how motivated the community behind the OS is, if it exists, it can – likely – be rooted. If not, wait a week.

If you're still an Android virgin and are just looking around, we recommend checking out the latest and greatest in Android news from MakeUseOf.

2. Android Terminology 101

Before you start getting funky with your phone, you'd best make yourself familiar with these basic terms in order to make your life simpler – either when you're trying to make sense of an unfamiliar how-to guide or simply looking for troubleshooting help. As any serious Google-Fu practitioner knows, life becomes that much simpler when you've got the right keywords.

First of all, what is **rooting**? We've already mentioned it a few times. Rooting is the process through which a user may modify his OS – in this case, Android – in order to obtain administrative or privileged control (**root** access) to the sub-system. Through this process you, the handsome user, can overcome the limitations that your carrier or manufacturer may have imposed upon your phone. The first step you should take, although it's not mandatory, is to do a backup before you potentially mess anything up. The second step is to unlock your Bootloader (check the term below) and the final step is to obtain root or Superuser access.

In this brief introduction to Android Terminology we'll overlook all the terms you might come across during your first foray into the underbelly of Android, but there's plenty that we won't cover here and you'll become familiar with during your own travels. We will also be taking an individual look at each mayor Android version available at the moment, so should you need to pick choose a custom ROM, you'll be able to see which features it may offer depending on the stock version of Android it's based on.

Lets go over some other terms, in alphabetical order. Refer to these if you get lost later in the manual or while re-searching on the wider web.

Apps2SD: an app that allows you to move other programs from your phone's internal memory to its microSD card. Only useable once you're rooted, this is one of its most popular applications for devices with limited internal storage.

ADB (Android Debug Bridge): a command line tool that allows you to communicate with a connected Android device or emulator.

Android: hardly needs to be introduced, unless you're reading the wrong guide. This is the Linux-based operating system that powers the device you're likely trying to root.

Android 1.0-1.1: the first two versions of Android – you're not likely to see any updated ROMs based on these. 1.0 was released on September 23, 2008 on the HTC Dream.

APK (Android Application Package): the format in which Android apps are packed; you'll likely have to download several of these manually after the rooting process if your aim is to install custom ROMs.

Alpha: the first phase of software testing. Programs in this stage are often unstable, which could lead to crashes or loss of information in the worst cases; a great deal of popular ROMs and Kernels are in their Alpha phases.

Baseband: is an adjective that describes signals and systems whose range of frequencies is measured from close to 0 hertz to a cut-off frequency, a maximum bandwidth or highest signal frequency.

Boot Animation: the animation which plays while your phone is powering up, ROMs often include their own custom animations.

Bootloader: the program that rules over your device's startup routine.

Bootloop: a relatively harmless side-effect of rooting procedures gone wrong, this is when your phone gets stuck in a never-ending cycle of boot animations.

Beta: the software development stage that comes after Alpha; although apps in Beta are generally more stable, they're still not considered ready for primetime. It's common for non-professional software to remain in Beta for long amounts of time.

Cache: it's a special area of your device's memory where data is stored for faster access later.

CPU (Central Processing Unit): you've no doubt heard about this one before. Without going in depth, it's the piece of hardware that handles the processing of all information that is necessary in order for you to kill time playing Angry

Birds during your commute.

Cupcake (Android 1.5): released on April 30, 2009, this update was based on the 2.6.27 Linux kernel and included the following new features:

- *Support for third-party virtual keyboards with text prediction and user dictionary for custom words*
- *Support for Widgets - miniature application views that can be embedded in other applications (such as the Home screen) and receive periodic updates*
- *Video recording and playback in MPEG-4 and 3GP formats*
- *Auto-pairing and stereo support for Bluetooth added (A2DP and AVRCP profiles)*
- *Copy and paste features added to web browser*
- *User pictures shown for Favorites in Contacts*
- *Specific date/time stamp shown for events in call log, and one-touch access to a contact card from call log event*
- *Animated screen transitions*
- *Ability to upload videos to YouTube*
- *Ability to upload photos to Picasa*

Dalvik: this is the Android's virtual machine, which serves to run Dalvik Executable files (.dex).

Dalvik Cache: this separate cache is meant to store information about your apps in order for them to load faster; you will often be instructed to wipe both this and the regular cache when flashing custom ROMs and Kernels.

Donut (Android 1.6): released on September 15, 2009, this update was based on the 2.6.29 Linux kernel and included the following new features:

- *Voice and text entry search enhanced to include bookmark history, contacts, and the web*
- *Ability for developers to include their content in search results*
- *Multi-lingual speech synthesis engine to allow any Android application to "speak" a string of text*
- *Easier searching and ability to view app screenshots in Android Market*
- *Gallery, camera and camcorder more fully integrated, with faster camera access*
- *Ability for users to select multiple photos for deletion*
- *Updated technology support for CDMA/EVDO, 802.1x, VPNs, and a text-to-speech engine*
- *Support for WVGA screen resolutions*
- *Speed improvements in searching and camera applications*
- *Expanded Gesture framework and new GestureBuilder development tool*

Éclair (Android 2.0): released on October 29, 2009, this update was based on the 2.6.29 Linux kernel and included the following new features:

- *Expanded Account sync, allowing users to add multiple accounts to a device for email- and contact-synchronization*
- *Exchange email support, with combined inbox to browse email from multiple accounts in one page*
- *Bluetooth 2.1 support*

- *Ability to tap a Contacts photo and select to call, SMS, or email the person*
- *Ability to search all saved SMS and MMS messages, with delete oldest messages in a conversation automatically deleted when a defined limit is reached*
- *Numerous new camera features, including flash support, digital zoom, scene mode, white balance, color effect and macro focus*
- *Improved typing speed on virtual keyboard, with smarter dictionary that learns from word usage and includes contact names as suggestions*
- *Refreshed browser UI with bookmark thumbnails, double-tap zoom and support for HTML5*
- *Calendar agenda view enhanced, showing attending status for each invitee, and ability to invite new guests to events*
- *Optimized hardware speed and revamped UI*
- *Support for more screen sizes and resolutions, with better contrast ratio*
- *Improved Google Maps 3.1.2*
- *MotionEvent class enhanced to track multi-touch events*
- *Addition of live wallpapers, allowing the animation of home-screen background images to show movement*

Exploit: not exclusively a term related to the Android OS but to computing in general, it is the process of taking advantage of a programming vulnerability in order to make something unexpected occur.

EXT (Extended File System): the EXT was the first file system tailor-made for the Linux kernel.

Force Close: often referred to simply as a FC, this is Android slang for crashing apps.

Fastboot: a diagnostic setting meant to modify the settings of the flash file system over a USB connection.

Flashing: this is the memory used in all your Android devices.

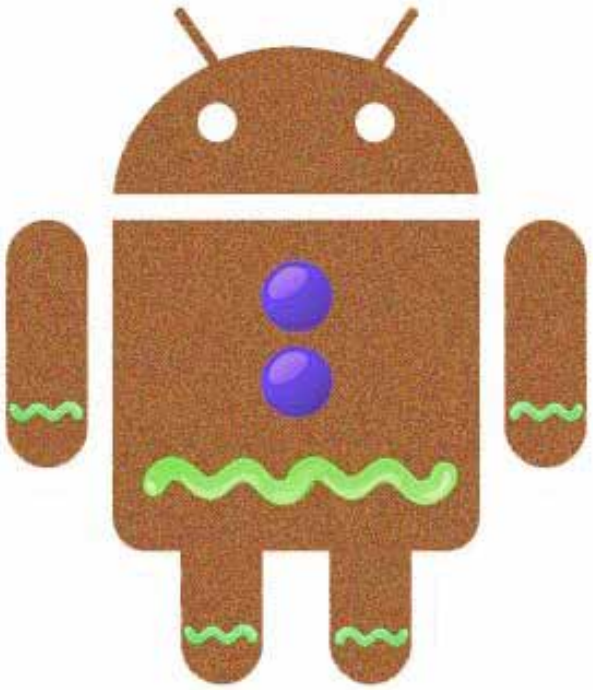
Froyo (Android 2.2): released on May 20, 2010, this update was based on the 2.6.32 Linux kernel and included the following new features:

- *Speed, memory, and performance optimizations*
- *Additional application speed improvements, implemented through JIT compilation*
- *Integration of Chrome's V8 JavaScript engine into the Browser application*
- *Support for the Android Cloud to Device Messaging (C2DM) service, enabling push notifications*
- *Improved Microsoft Exchange support, including security policies, auto-discovery, GAL look-up, calendar synchronization and remote wipe*
- *Improved application launcher with shortcuts to Phone and Browser applications*
- *USB tethering and Wi-Fi hotspot functionality*
- *Added an option to disable data access over mobile network*
- *Updated Market application with batch and automatic update features*
- *Quick switching between multiple keyboard languages and their dictionaries*
- *Voice dialing and contact sharing over Bluetooth*
- *Support for Bluetooth-enabled car and desk docks*
- *Support for numeric and alphanumeric passwords*
- *Support for file upload fields in the Browser application*
- *Support for installing applications to the expandable memory*
- *Adobe Flash support*
- *Support for extra-high-PPI screens (320ppi), such as 4" 720p*
- *Gallery allows users to view picture stacks using a zoom gesture*

Gingerbread (Android 2.3): released on December 6, 2010, this update was based on the 2.6.35 Linux kernel and included the following new features:

- *Updated user interface design with increased simplicity and speed*
- *Support for extra-large screen sizes and resolutions (WXGA and higher)*
- *Native support for SIP VoIP internet telephony*
- *Faster, more intuitive text input in virtual keyboard, with improved accuracy, better suggested text and voice input mode*
- *Enhanced copy/paste functionality, allowing users to select a word by press-hold, copy, and paste*
- *Support for Near Field Communication (NFC), allowing the user to read an NFC tag embedded in a poster, sticker, or advertisement*
- *New audio effects such as reverb, equalization, headphone virtualization, and bass boost*
- *New Download Manager, giving users easy access to any file downloaded from the browser, email, or another application*
- *Support for multiple cameras on the device, including a front-facing camera, if available*

- *Support for WebM/VP8 video playback, and AAC audio encoding*
- *Improved power management with a more active role in managing apps that are keeping the device awake for too long*
- *Enhanced support for native code development*
- *Switched from YAFFS to ext4 on newer devices*
- *Audio, graphical, and input enhancements for game developers*
- *Concurrent garbage collection for increased performance*
- *Native support for more sensors (such as gyroscopes and barometers)*



Governor: you'll be seeing this term once you start flashing custom ROMs and Kernels, the governor controls the speed of the CPU and once you have Superuser privileges, you'll be able to set it to your liking.

Honeycomb (Android 3.0): released on February 22, 2011, this was the first Tablet-exclusive Android release, based on the 2.6.36 Linux kernel, it was first featured in the Motorola Xoom Tablet and offered the following changes:

- *Optimized tablet support with a new virtual and "holographic" user interface*
- *Added System Bar, featuring quick access to notifications, status, and soft navigation buttons, available at the bottom of the screen*
- *Added Action Bar, giving access to contextual options, navigation, widgets, or other types of content at the top of the screen*
- *Simplified multitasking – tapping Recent Apps in the System Bar allows users to see snapshots of the tasks underway and quickly jump from one app to another*
- *Redesigned keyboard, making typing fast, efficient and accurate on larger screen sizes*
- *Simplified, more intuitive copy/paste interface*
- *Multiple browser tabs replacing browser windows, plus form auto-fill and a new "incognito" mode allowing anonymous browsing*

- *Quick access to camera exposure, focus, flash, zoom, front-facing camera, time-lapse, and more*
- *Ability to view albums and other collections in full-screen mode in Gallery, with easy access to thumbnails for other photos*
- *New two-pane Contacts UI and Fast Scroll to let users easily organize and locate contacts*
- *New two-pane Email UI to make viewing and organizing messages more efficient, allowing users to select one or more messages*
- *Support for video chat using Google Talk*
- *Hardware acceleration*
- *Support for multi-core processors*
- *Ability to encrypt all user data*

Hotspot: slang for a spot that offers internet access over Wi-Fi.

Hboot: Android's equivalent of your PC's BIOS.

Ice Cream Sandwich (Android 4.0): released on October 19, 2011, alongside the Galaxy Nexus, this update was based on the 3.0.1 Linux kernel and included the following new features:

- *Enhanced speed and performance*
- *Virtual buttons in the UI, in place of capacitive or physical buttons*
- *Separation of widgets in a new tab, listed in a similar manner to apps*
- *Easier-to-create folders, with a drag-and-drop style*
- *A customizable launcher*
- *Improved visual voicemail with the ability to speed up or slow down voicemail messages*
- *Pinch-to-zoom functionality in the calendar*
- *Offline search, a two-line preview, and new action bar at the bottom of the Gmail app*
- *Ability to swipe left or right to switch between Gmail conversations*
- *Integrated screenshot capture (accomplished by holding down the Power and Volume-Down buttons)*
- *Improved error correction on the keyboard*
- *Ability to access apps directly from lock screen (similar to HTC Sense 3.x)*
- *Improved copy and paste functionality*
- *Better voice integration and continuous, real-time speech to text dictation*
- *Face Unlock, a feature that allows users to unlock handsets using facial recognition software*
- *New tabbed web browser, allowing up to 16 tabs*
- *Automatic syncing of browser with users' Chrome bookmarks*
- *A new typeface family for the UI, Roboto*
- *Data Usage section in settings that lets users set warnings when they approach a certain usage limit, and disable data use when the limit is exceeded*

- *Ability to shut down apps that are using data in the background*
- *Improved camera app with zero shutter lag, time lapse settings, panorama mode, and the ability to zoom while recording*
- *Built-in photo editor*
- *New gallery layout, organized by location and person*
- *Refreshed "People" app with social network integration, status updates and hi-res images*
- *Android Beam, a near-field communication feature allowing the rapid short-range exchange of web bookmarks, contact info, directions, YouTube videos and other data*
- *Hardware acceleration of the UI*
- *Resizable widgets – already part of Android 3.1 for tablets, but new for cellphones*
- *Wi-Fi Direct*
- *1080p video recording for stock Android devices*
- *Jelly Bean (Android 4.1-4.2): released on November 13, 2012, alongside the LG Nexus 4 and the Samsung Nexus 10, this update included the following new features:*
- *"Photo Sphere" panorama photos[98]*
- *Keyboard with gesture typing (this feature is also available for Android 4.0 and later via the Google Keyboard app)*
- *Lock screen improvements, including widget support and the ability to swipe directly to camera[99]*
- *Notification power controls ("Quick Settings")*
- *"Daydream" screensavers, showing information when idle or docked*
- *Multiple user accounts (tablets only)*
- *Support for wireless display (Miracast)*
- *Accessibility improvements: triple-tap to magnify the entire screen, pan and zoom with two fingers. Speech output and Gesture Mode navigation for blind users*
- *New clock app with built-in world clock, stop watch and timer*
- *All devices now use the same interface layout, previously adapted from phones on 4.1 for smaller tablets (with centered software buttons, the system bar at the top of the screen, and a home screen with a dock and centered application menu), regardless of screen size*
- *Increased number of extended notifications and Actionable Notifications for more apps, allowing users to respond to certain notifications within the notification bar and without launching the app directly*
- *Always-on VPN*
- *Premium SMS confirmation[100]*
- *Group Messaging*

JIT (Just-in-Time Compiler): also known as dynamic translation, it was introduced in Android 2.2 (Froyo); it's a method meant to improve the performance of apps.

Kang: a Kang release is the name given to a release based on small modifications to another previous one, done by someone different than the original programmer.

Kernel: your Kernel allows your phone's software to interface with its hardware and as such all custom ones are designed to improve the degree to which you can take advantage of the full capability of your components. ROMs often include their own custom Kernels, although there's also a wide variety of standalone ones.

Mod: this is how we refer to any modified software that has been tampered with to do something that it wasn't meant to do in the first place, often with awesome results.

NAND: a type of flash memory.

Nandroid: using Nandroid you can perform full backups and restore them from your Recovery screen, learn to love it and use it often.

Nightly: these are builds that are compiled after each day of development, users of Nightly releases are often offered the most cutting edge of features at the price of lesser stability and having to do frequent updates.

Open & Closed Beta: their names pretty much give it away; closed betas are limited to a select group of testers whereas Open betas are available to the public. Two different methodologies in order to compile the most information possible about a software's performance in order to improve it before its—hopefully—timely release.

Overclock: a method through which you can force your processor to run at higher speeds than it's originally meant to. It's considered a bit risky, but with some research you should be able to find out how far other users have safely pushed theirs.

Partition: much like your desktop's hard drive, your phone's internal storage can be partitioned for organization's sake.

Recovery: this is a booting option for your phone, from where you can flash updates or custom firmware, as well as

do full wipes and perform backups. You'll likely be asked to run a patched Recovery image to make your life easier.

Rom/Firmware: a ROM is a modified OS for your phone, which you can flash once your device is rooted. They're usually jam packed with features that the official Android releases may not offer yet, or simply offer you the chance to update to a higher release than may be available for your device at the moment due to carrier limitations.

RAM (Random Access Memory): a group of memory chips, typically of the dynamic RAM (DRAM) type, which function as the computer's primary workspace.

Root: the first level of your system folder.

SBC: this is overclocking's little known cousin, the idea is to allow your battery to be charged past regular and safe levels, thereby increasing its duration per charge, but potentially reducing its lifetime overall.

Sideloading: sidestepping the Android market when it comes to installing applications.

Superuser/SU: you might compare this to administrative privileges on a Windows computer, a Superuser account gives you full access to your device's system, thereby allowing you to tap into its potential for either good, or evil (no, really, you can cause some serious harm if you mess around blindly in there).

SDK: also referred to as the devkit, it's the set of tools that makes possible the creation of applications for a particular OS, in this case, Android.

Stock: the Android system in all its official glory, can also be used as slang for any other software or OS's non-modded versions.

Tethering: through tethering, you can share your device's own internet connection with other computers either over Wi-Fi, Bluetooth or a physical connection. This is often limited by carriers, but you'll be able to take advantage of this feature once you're rooted.

Underclock: the opposite of overclocking. You might wonder why on earth anyone would want to make their phone run slower, so to speak, and the simple answer is to improve your battery life by saving on resources when you're not pushing your phone to its maximum capacity.

Undervolt: much like underclocking, by undervolting, you can take away some of your CPU's power, thereby increasing your battery life and resulting also in lower overall temperatures.

USB (Universal Serial Bus): you should already be familiar with this term if you spend any sort of time in the general vicinity of a computer, you'll likely have to plug in your phone several times during the rooting process in order to transfer files or move backups to your PC. Most phones use a variation of this port, the microUSB, to charge and sync.

XDA Developers Forums: as the guide progresses, you'll see us making mention of several original sources from these forums. XDA are the biggest source and hub for Android developers online and most big-ticket projects have had their start there and still maintain their own subsections or threads where new updates are constantly posted. If you want to stay on top of the Android scene, swing by often!

3. Do I Really Need to Root?

Now, before we actually get down to business, you need to sit down, take a deep breath and ask yourself a very important question: do I really need to root my device?

Think carefully! Not only is your first time likely to take a while as you get familiar with the inner workings of your phone, but research has found that an alarmingly high percentage of first time root users often can never go back to their regular lives – they're destined to devote a nice chunk of their time to finding ever better ROMs, trying out new Kernels and other deviant activities.

As to the actual reasons why you might **need** to root your device, they range from improving its performance by installing custom ROMs and Kernels, to wishing to use any particular app that requires root access. If you're coming over from the dark side (using an iPhone), this is the equivalent of Jailbreaking.

Not everything is all fun and games when messing with your Android smartphone, of course, which brings us forth to our next topic.

4. The Risks of Rooting

The risks of rooting are many, but fairly straightforward. You need not fear as long as you do your research before you do any permanent damage (the chances of which are very low, we just like to be dramatic).

First of all, and the worst possible outcome, is bricking your Android device. Though the term bricking is overly graphic, it's of course, not literal. Your phone is considered bricked if it essentially stops working, be it stuck in an endless Bootloop, unable to power-up, etc. It does however, not apply to a phone that has been flattened by a boot for example, for such occasions, the term FUBAR suffices.

Secondly, with great power comes great responsibility. In this case, though rooting gives your Superuser powers, it also punctures the veil of protection laid by your manufacturer or carrier with your phone, allowing you for example to install infected apps that haven't been culled by the Android Market's filters. Android malware is a frightening reality, and a high-percentage of users have dealt with it. The effects that may range from relatively harmless crashes, to the possibility of having your private information stolen; just to err on the safe side, you probably want to find an adequate antivirus for your phone.

The final risk, and the only unavoidable consequence of rooting, is the voiding of your warranty. Your manufacturer will not be responsible for any liability in the case you damage your phone by any means once you've crossed this bridge, so to speak. It may seem a little intimidating, but if you've stuck with this guide so far, we'll bet you're the kind of user that is willing to do their research before messing with their Android device, which is pretty much the ultimate insurance available.

5. How To Fully Back Up Your Android Device

If the last section scared you away from the idea of rooting your device, you needn't fear: there are as many options for securing your phone as there are for potentially messing it up. It's all thanks to Android's incredibly active user community.

Possibly the most important amongst these options, if you plan on rooting your device, is backing up your files in case your phone is potentially rendered useless and you cannot get to them. In today's age of ever-present computer and Internet access, you've undoubtedly come across this term at some point. Backing up your files basically entails making a copy of them on a different hard drive, be it portable, a simple USB flash memory, or perhaps most convenient, a cloud service which allows you to access them from wherever you may be as long as you've got internet access.

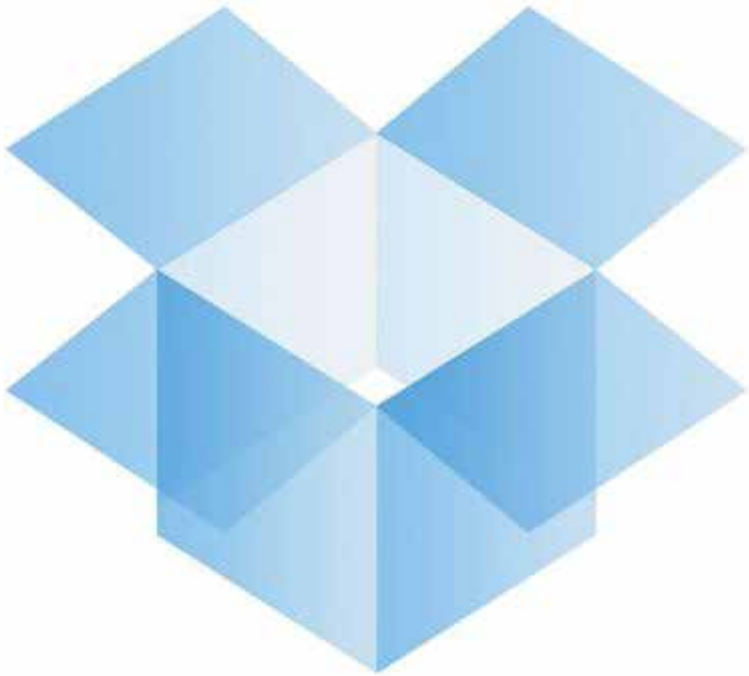
As far as basic options go, the Android OS comes out of the box with the option of effortlessly backing up most of the data associated with your Google accounts, such as contacts, wireless settings, etc. (Available through Settings > Personal > Backup & Reset, with more options under Settings > Personal > Accounts & Sync).

You can also manually copy pictures, music and videos from your phone onto another computer by simply plugging it in with a USB connector. It will then appear as an external hard drive, most media files are stored in the DCIM folder found within. If you're using a MAC, you'll have to download the Android File Transfer tool manually from the Android website before you're able to access your device as you would any other external file storage unit.

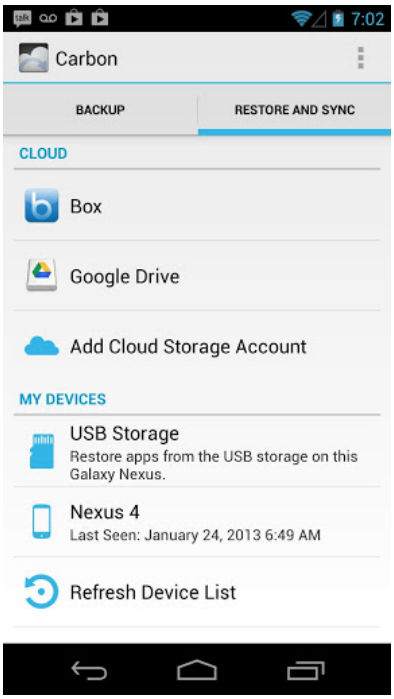
If these options don't cut if for you, then your best bet would be a third party backup application, of which there is a staggering variety available for the Android OS – both free and paid. Some only work on rooted devices.

Doing a full coverage on backup apps available for Android would take a whole guide in and of itself, so we'll stick with our top non-rooted (since that's what you're here for) picks in this section. The following should keep you covered in every possible situation:

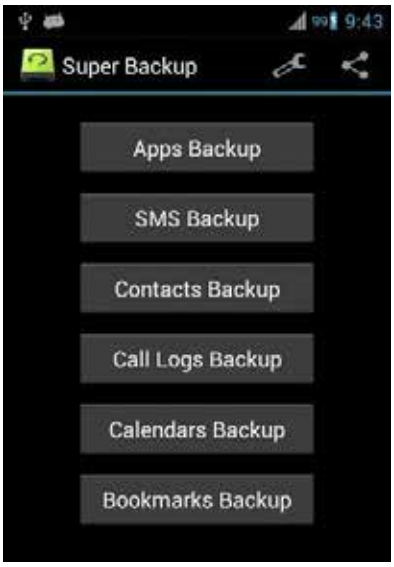
- *Dropbox: hardly a new name in the backup game, the mobile version of Dropbox allows you to effortlessly sync files between your phone and any other devices with Internet access. It even includes an option to automatically upload any photos you take or videos you shoot with your phone so you'll have a full backup of those most precious files without lifting a finger.*



- *Helium: this app offers features comparable to that of Titanium Backup (we'll be covering it further on, in the* **Apps for Rooted Users** *section). Once you've downloaded the phone app you have to download as its desktop counterpart as well and your particular device drivers in order to make it work. Helium works with all versions of Android from 4.0 (Jelly Bean) onwards and allows you not only to back up individual apps, but their data separately as well in case you don't want to create a massive backup file and don't mind re-downloading some .apks later (i.e. you want to save your progress on a game whose original download was 5gb saving the app itself, which would add that figure to the size of your backup). There's also a paid version of carbon, which offers the option to sync your phone with your favorite cloud backup service (currently only Dropbox, Box and Google Drive are supported).*



- *Super Backup: if all you want is to backup things like text messages, call logs and bookmarks, this apps offers the simplest solution. You can schedule it to run automatically and choose where to store your backup files, as well as tweaking its settings so that they'll be automatically sent to your email if that's what you prefer. Super Backup is also a valid option for backing up apps, but we'd recommend sticking with Carbon if that's what you're after. There's both a free and a paid version of this app.*



- *AirSync: if you're a Mac user and the idea of downloading the Android File transfer tool seems like too much of a handle, DoubleSync has made this tool available for Android so you can sync all your media files with ease to your iTunes over any available Wi-Fi connection.*

Before you root your phone, doing a **full** backup of your phone is heavily recommended, since chances are that you'll have to do a full wipe (format it) in order to do so. Even if it isn't, you should get into the habit of doing regular backups of your most sensitive data in order to ensure your peace of mind.

6. Getting your Root On

This is it, folks. The moment of truth. We've made the process sound overly complicated over the first part of this guide, in part to avoid you jumping right into the deep end and doing any potential harm to your phone. We also wanted to provide you with a foundation of knowledge you'll need to experiment with other phones, ROMs and kernels in the future.

The truth, though, is that there are tools available which will make the process as simple as a few clicks – and these are compatible with the majority of phones.

Since the Android market is being flooded with a constant new influx of phones from a myriad of manufacturers, it'd be practically impossible to compile individual guides for each – at least, not if I want to write a guide shorter than *War and Peace*. So we've opted to bring you all of the apps that do most of the work for you, regardless of whether you're still rocking your retro Motorola Milestone or the latest Nexus flagship device.

6.1 Quick and Painless Rooting with "SuperOneClick"

Meet and fall in love with SuperOneClick if you're the kind of person that constantly switches phones, because it will save you an untold amount of time if you want to root a variety of devices. Count yourself lucky: not so long ago we had to painstakingly look up individual rooting guides depending on which model of phone we had. This handy little program will allow you to root pretty much any phone with a few simple clicks once you've learned to use it (which is pretty simple).

First of all, in order to use SOC you'll require to have the Microsoft .NET Framework 2.0+ installed on your desktop, since you'll be plugging in your phone in order to do the deed, and be using one of the following operating systems:

- *Windows XP*
- *Windows Vista*
- *Windows 7*
- *Ubuntu Hardy (8.04 LTS) or newer*
- *Debian Lenny (5.0) or newer*

If you're reading this from a Mac, don't despair! SOC is compatible with Mono 1.2 and upwards (a program which allows for the development and execution of cross-platform software).

So, you've already downloaded SuperOneClick, you've checked your OS is compatible. All that's left is to double-check if your phone is included on the official SOC compatibility list, which is deceptively short:

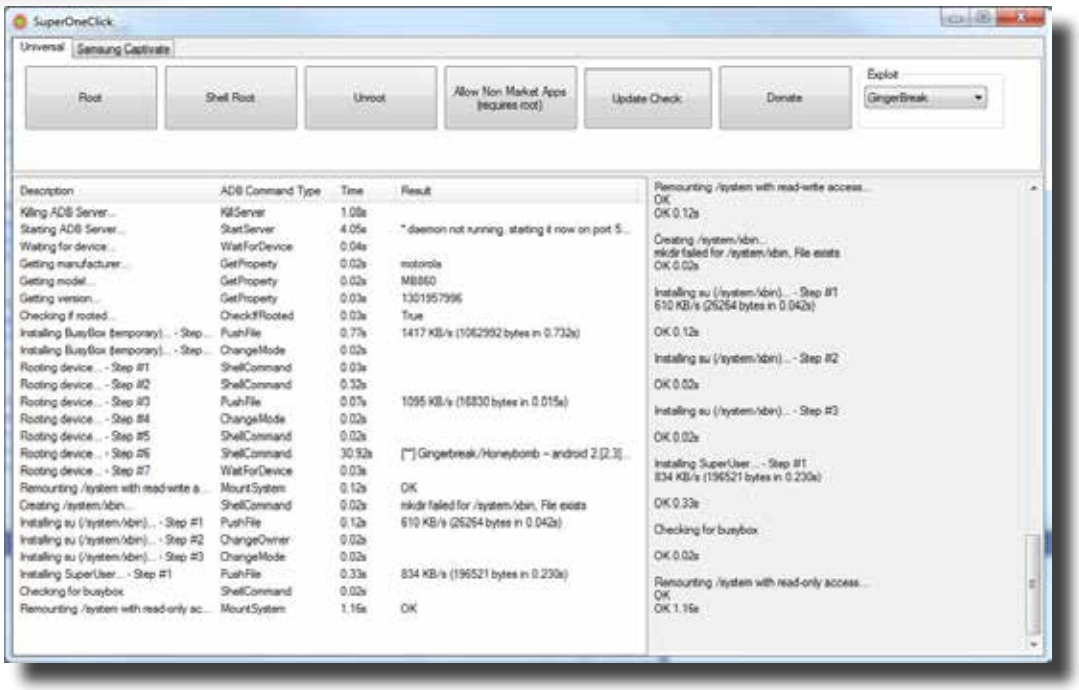
- *Acer Liquid Metal*
- *Dell Streak*
- *HTC Magic (Sapphire) 32B*
- *HTC Bee*
- *LG Ally*
- *Motorola Atrix4G*
- *Motorola Charm*
- *Motorola Cliq*
- *Motorola Droid*
- *Motorola Flipside*

- *Motorola Flipout*
- *Motorola Milestone*
- *Nexus One*
- *Samsung Captivate*
- *Samsung Galaxy 551 (GT-I5510)*
- *Samsung Galaxy Portal/Spica I5700*
- *Samsung Galaxy S 4G*
- *Samsung Galaxy S I9000*
- *Samsung Galaxy S SCH-I500*
- *Samsung Galaxy Tab*
- *Samsung Transform M920*
- *Samsung Vibrant*
- *Sony Ericsson Xperia E51i X8*
- *Sony Ericsson Xperia X10*
- *Sprint Hero*
- *Telus Fascinate*
- *Toshiba Folio 100*

Keep in mind, this is only the official compatibility list as of the writing of this guide (July 2013), and although the program has been proven to be useable in most devices, the developers haven't updated this list in quite a while. SuperOneClick seems to be able to root any phone that doesn't have a NAND lock (a restriction which doesn't allow you to write to the /system mount) through the use of its own particular ADB exploit.

Once all that is covered, there's a few last instructions: put your phone in USB debugging mode (Settings > Applications > Development > USB debugging), install the appropriate Android drivers for your device are installed on your PC (they should install automatically the first time you plug it in using your USB cable, if they don't, visit the manufacturer's website and download them manually) and finally, make sure your SD card isn't mounted while rooting (this should be automatic once you plug in your phone, as you'll notice you may not be able to access some of your internal folders from it while it remains so).

As for instructions to using the program itself, as can be seen in the following screenshot, the program sincerely lives up to its name, as the whole root process is dependent on a single click while your device is plugged in, and the rest takes care of itself.



For up to date info on the development of SuperOneClick, you can check its XDA Developers thread.

6.2 UnlockRoot

We're living in the future! If SuperOneClick didn't do the trick for you, don't panic: there are plenty of other simple programs that will have you up and rooted in no time.

Chief amongst these and comparable to SOC is UnlockRoot, which also boasts a one-click rooting feature and it's compatible with several of the latest devices (including several popular tablets), such as:

- *Samsung Galaxy Note 2*
- *Samsung Galaxy SIII*
- *Samsung GT-I9100*
- *Samsung Galaxy Note*

- *Samsung Galaxy S*
- *Samsung Nexus S*
- *HTC One S*
- *HTC Droid DNA*
- *HTC EVO 4G LTE*
- *HTC Desire HD*
- *HTC Desire S*
- *Google Nexus 4*
- *Google Nexus 7*
- *Google Nexus 10*
- *Amazon Kindle Fire*
- *Kindle Fire HD 7"*
- *Lenovo P700*
- *LG Optimus 2X*
- *Sony Xperia Arc*

Unlike with SOC, the UnlockRoot developers do keep a full updated list of all compatible devices though.

In order to get it to work, all you have to do – once you've opened the program and downloaded the appropriate drivers for your phone – is click on the Root option with your device plugging in through an USB cable and set in USB debugging mode (Settings > Applications > Development > USB Debugging).

6.3 What If I Can't Use Either SuperOneClick or UnlockRoot?

Before you collapse into a puddle of tears, let me assure you, my dear reader, that you aren't out of luck yet. If you check the compatibility lists of both SOC and UR, you'll notice that several of the same devices are left out of both and that is no mere coincidence.

Most of the devices that don't work right away with either aren't supported because they sport what is known as a NAND lock, which is to say, the NAND memory of the phone can't be accessed until the lock is revoked, which is necessary in order for the individual exploits of each program to act (NAND locks are mostly present in HTC devices).

If you own one of these, all you have to do is remove the lock, so to speak, in order to properly root your phone – otherwise you won't achieve a persistent root, but only a superficial one (which is to say, you won't have access to your / system folder). You can find the software to do so for each NAND locked device at Unrevoked. Unrevoked will allow you to not only remove the lock, but root your phone in one fell swoop with the same simplicity of SOC and UR.

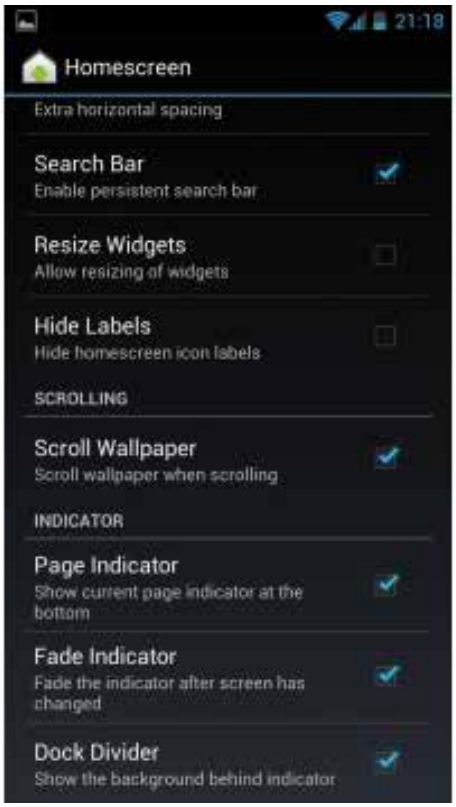
7. I'm Rooted, Now What?

7.1 A Brief Overlook at the Most Popular ROMs

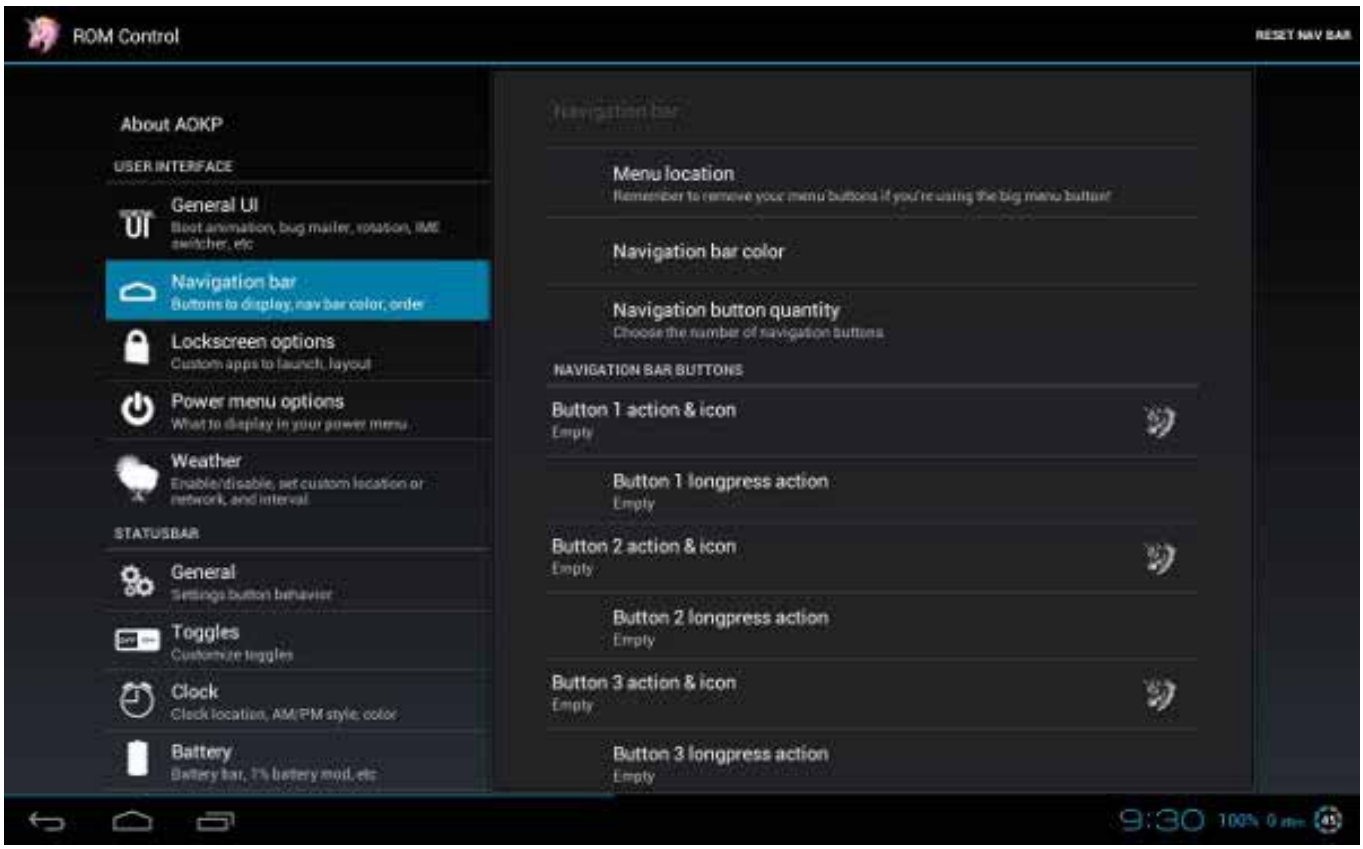
Flashing custom ROMs is possibly the best reason to mess around with your fancy phone by rooting it. You might do this because your manufacturer stopped putting out out OS updates, because those updates aren't coming out fast enough or your, or simply because you want a change of pace. Whatever your reason, here's a list of most often recommended ROMs for users of all walks of life:

- *Slim Bean: a sleek and lightweight option, yet hardly bereft of features. It boasts great performance on most devices (although it bears to mention that given the vast array of available Android phones, it's impossible to predict performance for each. You should always assume that reviews are based on tests performed on current generation devices). Battery life is also better than usual, since Slim Bean packs its own kernel; it also comes with an automatic-update feature, so you won't have to keep manually downloading and flashing new updates.*

- *Liquid Smooth: this ROM lives up to its name, with a focus on pure performance across the board. It makes messing around with your processor settings pretty easy in order for you to tweak it to perfection with whichever device you're carrying. There isn't much of an improvement on battery life, but you have the option of undervolting your processor or changing its governor settings if you're desperate to get more juice out of yours. Testing does show the ROM tends to crash often, but it's nothing a reboot now and then won't take care of. Remember, most of these projects are undertaken by small teams of developers without many resources and as such, so you won't always get the most stable of products, but they have tremendous upsides.*



- *AOKP (Android Open Kang Project): think of AOKP like Android's mature cousin. It's a perfect choice for your first ROM if you're rooting for the first time, since thematically it's very similar to the stock Android, simply packing far more under the hood. It's compatible with most devices and it's long development story means it's a very stable choice for the faint hearted.*



- *Cyanogen Mod: our last pick is another aged heavyweight. Cyanogen is the ROM of choice for most Android enthusiasts, since it's jam packed with every feature you can imagine and it's stable – which you'd expect from a project this mature. If that weren't enough, it even gets good battery life.*

You'll notice we didn't go much into detail about the features of any of the ROMs we mentioned and that is simply because at the top of the food chain, most share the same array. The best ROMs aren't arguably about flash but stability and a wide variety of options for you to customize your device further than stock Android would ever let you. If you're sticking with the brand names instead of experimenting with new ROMs, it's all about picking whichever tickles your fancy the most or has the best story of compatibility with your device.

8. Apps for Rooted Users

Alright: you're rooted, you've flashed a fancy custom ROM. You're probably thinking, "Can I please, please stop reading this guide and go back to my regular programming?" not quite yet, young Android enthusiast. There's still one last subject to cover and it's quite fun. We're going to go over several of the best apps available only for rooted users so you'll be able to make the most out of your new, unlocked device, let's start:

- *Greenify: this one is rather spiffy, have you ever noticed how several of your apps remain running in the background even when you've closed them? Greenify allows you to "put them to sleep" so to speak, so they won't use up any of your valuable resources but still remain running in case they're important services.*
- *Network Log: this app allows you to keep the most detailed record of network usage possible, and it works in real-time! With it you can monitor individual app network use and it will notify you if any app attempts to connect to the web should you choose to enable that option.*
- *DriveDroid: one of the coolest available apps for Android and a must have tool on the kit of any of our readers who suffer the weight of being their family's or friends' go-to computer guy. DriveDroid allows you to turn your phone into a bootable Linux drive, using an ISO so you'll always be able to boot up and fix any troublesome computer.*
- *Titanium Backup: the one stop backup app for Android, we didn't mention it earlier in the backup section because it requires root permission to run. You can make full copies of your device's info with simply a few clicks and restore them with equal ease, as well as take advantage of its cloud backup options.*

- *Wireless Tether for Root Users: with this handy app you can easily turn your phone into a wireless hotspot, simple and useful.*
- *Undelete: as you might imagine due to its name, Undelete gives you the option of recovering accidentally deleted files (that haven't been written over). As well as the option to dispose of*

sensitive files without any option for recovery.

- *Avast Mobile Security & Antivirus: yes, this one is available even for non-rooted users, but for those that are, it offers an additional mobile Firewall feature that is sorely needed on most smart-phones, considering the kind of sensitive data they're prone to handle.*
- *Super Download Lite: this one is quite peculiar. SDL allows you to simultaneously use both your Wi-Fi and mobile data connection in order to increase your download speed, although the free version comes with quite a low file size limit.*
- *Clockwork Rom Manager: a must-have app if you can't stop flashing and trying new ROMs all the time. As it name implies, it will not only help you find new ROMs, but also flash and keep them updated, as well as perform backups.*

- *ADB Wireless: another useful app for tinkerers, this one will let you use the Android Debug Bridge over your Wi-Fi connection instead of forcing you to plug in with your USB cable. Pretty convenient for developers.*

In case you're still itching for more apps in general, take a look at MakeUseOf's compilation of Best Android Apps.

9. Sites for Further Information and Discussion

- *XDA Developer Forums*
- *Android Forums*
- *Tapatalk*
- *TalkAndroid*
- *Android Police*

You can also check MakeUseOf's article "6 Android Websites You Should Check out" for further pointers to great Android resources.

Guide Published: September 2013

makeuseof

Did you like this PDF Guide? Then why not visit MakeUseOf.com for daily posts on cool websites, free software and internet tips?

If you want more great guides like this, why not subscribe to MakeUseOf and receive instant access to 50+ PDF Guides like this one covering wide range of topics. Moreover, you will be able to download free Cheat Sheets, Free Giveaways and other cool things.

Home:	http://www.makeuseof.com
MakeUseOf Answers:	http://www.makeuseof.com/answers
PDF Guides:	http://www.makeuseof.com/pages/
Tech Deals:	http://www.makeuseof.com/pages/hot-tech-deals

Follow MakeUseOf:

RSS Feed:	http://feedproxy.google.com/Makeuseof
Newsletter:	http://www.makeuseof.com/pages/subscribe-to-makeuseof-newsletter
Facebook:	http://www.facebook.com/makeuseof
Twitter:	http://www.twitter.com/Makeuseof

Think you've got what it takes to write a manual for MakeUseOf.com? We're always willing to hear a pitch! Send your ideas to justinpot@makeuseof.com.

Download Other MakeUseOf PDF Guides!

http://makeuseof.com/pages