



OTTAWA

Happy New Year!

PC NEWS

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ARTICLE

Taking Control of My Smartphone (Unlocking the Bootloader) *by Alan German*

WARNING BOOTLOADER UNLOCKED

Your device's bootloader has been unlocked, allowing critical software components to be altered in a manner that may cause damage to the device or result in injury to users.

Motorola disclaims any liability for harm to person or property resulting from use of this device. Except for Developer Edition devices, all warranties are null and void.

Visit www.motorola.com/unlockbootloader for more information, and a copy of the applicable legal agreement.

In the previous article in this series I outlined why I wanted to root my Android smartphone, and indicated that the first step in the process was to unlock the phone's bootloader. I also noted the (perhaps) significant downside to this process – it voids the phone's warranty! Furthermore, for my phone – a Motorola Moto G (3rd Generation) – the manufacturer suggests that unlocking the bootloader “... may cause damage to the device or result in injury to users.” Clearly, this process is not for the faint of heart! However, we can still consider the steps involved, but actually implementing them will be only for those who, like me, have no problem with this aspect of the process. Readers should also note that the information provided here is specific to the Moto G3. Not all phones can be unlocked; some are easier to unlock than others; and the pro-

cess required will depend on the specific make and model of smartphone.

Unlocking the bootloader of the Moto G3 requires implementing the Developer Options on the phone, turning on the phone's USB debugging option, installing the Android Debug Bridge (ADB) and Fastboot software on a PC that can be connected to the phone with a USB cable, obtaining an unlock code from Motorola's web site, and running some commands on the PC with the phone connected in fastboot mode.

Since the above-noted concepts are specific to Android systems, some of them are no doubt new to OPCUG members, and a little background information will probably be useful. USB debugging mode on a smartphone is also known as “developer mode”. It's the process by which Android programmers can communicate directly with the phone's software from their computer, normally using Android Studio and the SDK (Software Development Kit). Android Studio is currently about a 2 GB download, with even more software being added after the initial installation. We don't need anything like the power that all this stuff provides to unlock the bootloader, so we will use ADB (Android Debug Bridge) as a kind of mini-SDK. The Fastboot program is what we will use to enter com-

mands to install new software on the phone.

The actual steps needed to unlock the Moto G3's bootloader are given below. Just an outline of the process is presented here. For anyone who needs to know the complete details, these are published as a series of blog posts, starting at: <https://tinyurl.com/unlockbootloader>

(1) Backup User Data

I had read on the Internet that rooting a smartphone would eliminate all the user settings and files. On my phone, the only items that I needed to retain were my list of contacts and the digital photographs stored on the micro-SDcard. Consequently, I exported my contacts to a VCF file, and copied this file, together with all the digital photos on my phone, over to my computer's hard drive. I also made a set of (hand-drawn) “screen maps” showing the locations of the icons for the apps that I

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Next Meeting: **WEDNESDAY, January 10th, 2018**

January Raffle

This month's raffle prize is the **XTREME Bluetooth Headphones**. They are compatible with all Bluetooth devices, feature soft ear cushions for maximum comfort, 40mm audio drivers for maximum sound quality with a BT range of up to 33 ft.

Ticket are \$1 for one, \$2 for three, and \$5 for ten.



Results of December Food Bank Drive

At its Dec 13, 2017 meeting, the OPCUG had its 6th collection for the Ottawa Food Bank, with \$135 in cash and two large bags of food. A big thank you to all the donators!

Coming Up...

→ January 10th, 2018

Topic: How to Take Better Vacation Photos
Speaker: Lynda Buske

Learn how to more effectively tell the story of your travels through pictures. Also learn how to use light, foreground, people and framing to not only create a better picture but to enhance the sensation of "being there" when viewed by others.

December Prize Winners

The raffle prize of an Xtreme HD Dashboard Camera was won by **Mark Cayer**.

The last of our door prize "Goup" mugs was taken home by **Rejean Heroux** but fear not! We have one "Goup" Mug left to be raffled off at the January meeting.

For meeting updates and additional details, visit <http://opcug.ca> and click on the **MEETINGS** button.

2018 CALENDAR

Meetings	Date	Time and Venue
OPCUG General Meeting	Wednesday, January 10 th	7:30 p.m. Bush Theatre of the Canada Aviation and Space Museum , 11 Aviation Parkway. http://casmuseum.techno-science.ca/en/index.php
Q&A Session	Wednesday, January 10 th	Immediately following the OPCUG General Meeting.
Beer BOF (Wing SIG East)	Wednesday, January 10 th	10:00 p.m. (after the Q&A) at Liam Maguire's , St. Laurent Blvd. at Innes Rd.

Unlock... *(Continued from page 1)*

had installed. This was to facilitate re-installation of the apps after the phone had been rooted.

(2) Enable USB Debugging Mode

On the phone, navigate to Settings – About Phone – Build Number, and tap on the build number seven times. A toast (a pop-up message) will be displayed: “You are now a developer!” A “Developer options” menu item is now displayed on the phone. Using this option we need to enable the “OEM unlocking” toggle. (Note on some phones, the option that is required to be enabled may be labeled “USB debugging”.)

(3) Login to Motorola’s Web Site

Next, on your computer, connect to Motorola’s web site for unlocking phones (<http://tinyurl.com/j7dmz17>). The first page basically repeats the warning that the phone’s warranty will be invalidated by unlocking the bootloader. If, like me, you are happy to continue, click on the “Proceed Anyway” button, in order to login to Motorola’s site.

Rather than setting up a specific account with Motorola, I used an existing G-mail account (i.e. press the “Sign in with Google” button). I was careful to locate the userid and password necessary to access this G-mail account. Motorola sends the unlock code in an E-mail message to this address and I had to be able to retrieve it. Note that rather than simply being able to download an unlock code from Motorola’s site directly, we have to use software to issue commands to the phone from the PC, and invoke a really strange process involving deciphering a code (the Device ID) to obtain another code (the unlock code). They don’t make it easy!

(4) Install the USB Drivers on the PC

The next page on Motorola’s site indicates “First, we’ll need to get your device ready to get the device ID and unlock key.” We are going to ignore Step 1 (Install the Android SDK). As noted above, this will install Android Studio which is a huge download. Later, we will install ADB and Fastboot instead of their more powerful cousin.

But, we do need to implement Step 2 - Install the latest Motorola USB Drivers. However, at the time of writing, the link on Motorola’s web page is broken and produces a 404 error. We need to use the following link instead: <https://mobilesupport.lenovo.com/ca/en/solution/MS88481>. Downloading and installing Motorola Device Manager allows us to make a connection between the phone and the computer.

But first, we need to power down the phone and boot it into fastboot mode. Access fastboot by pressing the volume-down key and the power button at the same time for several seconds. As the phone reboots, release the two buttons. The phone will display the “AP Fastboot Flash Mode (Secure)” screen. Connect the phone to the PC using a mini-USB to USB cable.

(5) Install ADB and Fastboot on the PC

In order to obtain the unlock code, we have to use ADB and Fastboot to issue commands to the phone from the PC. Shrimp208, a user on the XDA Developers web site, maintains a current installation package for this software (<http://forum.xda-developers.com/showthread.php?t=2317790>). Installing this package creates a folder at C:\Program Files (x86)\Minimal ADB and Fastboot.

Navigate to this folder and press Shift-Right-Click to bring up a context menu.

On my system, which has been updated to the Creators Update of Windows 10, I now select “Open PowerShell window here”. Note that, in contrast to the “normal” command window, PowerShell requires a “.” prefix together with normal DOS-type commands.

In the PowerShell window, type: `.\fastboot oem get_unlock_data`. Fastboot responds with a number of lines of alpha-numeric codes, each prefixed with “(bootloader)”. These text strings constitute the infamous “Device ID”. But, for some bizarre reason, the ID is split across the five lines of text, and with those spurious bootloader characters added. We need to eliminate the redundant characters and consolidate the ID into a single string of 131 characters. This is easy to do in a text editor, but take care to do it right. You need to eliminate all instances of (bootloader), all the spaces, and the carriage return/line feeds at the end of each line. Alternatively, you can use Motorola’s on-line Unlock Data Scrub Tool (https://motorola-global-portal.custhelp.com/app/standalone/bootloader/data_scrub) to consolidate the text into a single string.

Copy and paste the 131-character Device ID into the text box on Motorola’s web page labeled “Can my device be unlocked?” Click on this button and, if everything goes well, a “Request Unlock Key” button will be displayed on the web page. To obtain the unlock code, you must now select the “I Agree” radio button to acknowledge the terms of the legal agreement. Click on the “Request Unlock Key” and Motorola will (finally!) send the unlock code to the E-mail address that you used to login to their site.

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OTTAWA PC NEWS

Ottawa PC News is the newsletter of the Ottawa PC Users' Group (OPCUG), and is published monthly except in July and August. The opinions expressed in this newsletter may not necessarily represent the views of the club or its members.

Member participation is encouraged. If you would like to contribute an article to Ottawa PC News, please submit it to the newsletter editor (contact info below). Deadline for submissions is three Sundays before the next General Meeting.

Group Meetings

OPCUG meets on the second Wednesday in the month, except July and August, in the **Bush Theatre** of the **Canada Aviation and Space Museum**, 11 Aviation Parkway, Ottawa.
<http://casmuseum.techno-science.ca/en/index.php>

Meetings are 7:30–9:00 p.m. followed by a Q&A Session until 10 p.m.

Parking is available at the museum for a flat fee of \$4 after 5pm.

Details at <http://opcug.ca/public/regmtg.htm>

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(6) Retrieve the unlock code

Login to your E-mail account and open Motorola's message. The text will include the unlock code - and a line saying "Good Luck!" Now the latter sentiment doesn't inspire major confidence, but the chances are that if you have got this far, the rest of the process for unlocking and rooting the phone will be a breeze.

(7) Unlock the bootloader

We are one command away! Copy the Unlock Code from the E-mail message then in the PowerShell window, type: `.\fastboot oem unlock {paste your specific unlock code}`. Fastboot will respond with the message "Phone is successfully unlocked". Congratulations, your Moto G3 now has an unlocked bootloader.

Rooting the phone is next but, after struggling through all of the above twists and turns, we need to take a rest (and wait for the next article in the series) before we continue.

Watch for Part 3 of Alan's article in the February newsletter.

