

*ICE Unlock is an Android application that uses your fingerprint to unlock your mobile device.*

## EDIT/CREATE PIN

Your device can be unlocked using a PIN. You must create a PIN as a backup measure. Create or edit your PIN by selecting Edit/Create PIN from the main menu.

Selecting *Edit/Create PIN* will show the screen in Fig. 2. Enter a PIN containing at least 4 numbers and press **OK**, or **Cancel** to go back.

If you press **OK**, you will be prompted to confirm your PIN. Re-enter your PIN, or press **Cancel** to go back.

## HOW TO ENROLL A FINGERPRINT

Select *Enroll Fingerprint* from the main menu. If you have a previously enrolled fingerprint, you will be prompted to verify the existing fingerprint before changing to a new one. This verification step is to prevent your fingerprint from being accidentally or purposefully removed without your permission.

Enrolling a fingerprint is a 3-step process: First, capture an image of your chosen fingerprint. (See “Capturing a Fingerprint” in this document.) Second, preview the image. Finally, verify the image by capturing your fingerprint a second time. If the two images match, you may enroll that fingerprint. If it fails, you may try reshooting your fingerprint, accessing *ICE Unlock Help* for tips in capturing your fingerprint, or cancelling the enrollment process.

## HOME SCREEN REPLACEMENT

ICE Unlock is designed to serve as a security screen, so it must be set as the default home screen.

After successfully enrolling a fingerprint, you will be prompted to set **ICE Unlock** as the default action. It is important that **ICE Unlock** be set to **Always**, otherwise it will not work correctly. See Fig. 3 for reference.

**Important:** *If you have multiple applications that can be a home screen, you will be prompted to select the home screen you would like to go to after unlocking ICE Unlock. This is a “security” feature of Android so that malicious apps cannot take over your device.*

## CAPTURING A FINGERPRINT

Capture a fingerprint by performing the following steps:

1. Using the rear-facing camera, align your chosen finger in the center of the oval.
2. Move your finger closer or farther away from the camera to make your fingerprint fill as much of the oval as possible.

**Important:** *Some cameras do not focus up close very well so you might try moving your finger further away from the device.*

3. Tap the screen once, and you will see the camera focus and the oval turn green to indicate it is focused. It will then capture an image of your fingerprint.

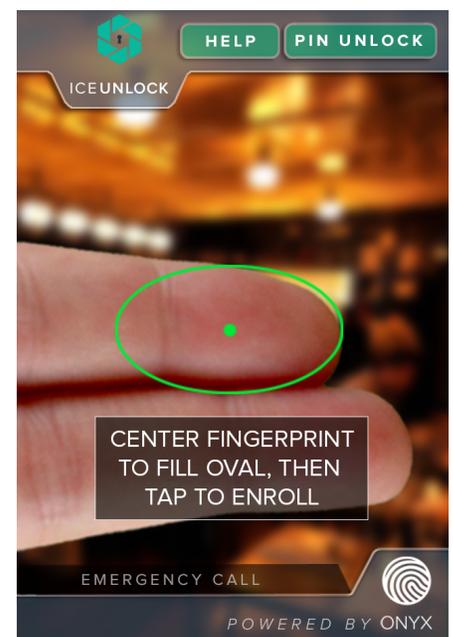
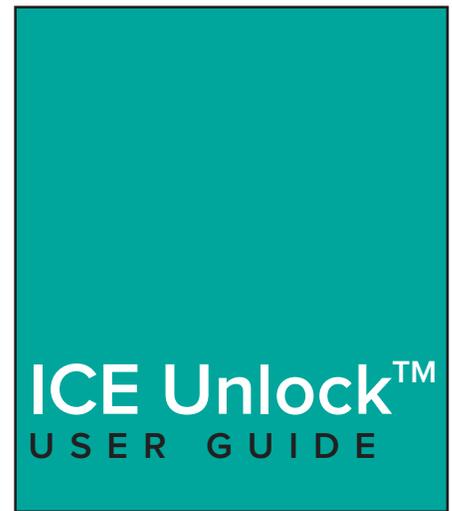


Fig. 1- The ICE Unlock Capture Screen.

POWERED BY



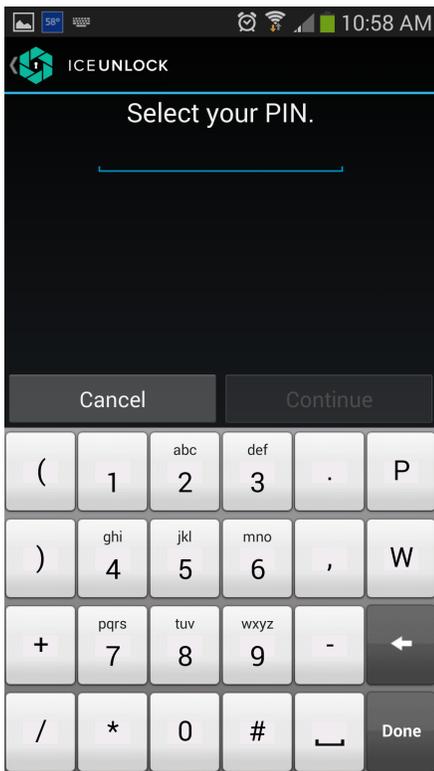


Fig. 2 - The PIN entry screen.

## DELETE AN ENROLLED FINGERPRINT

Delete an enrolled fingerprint by selecting *Delete Fingerprint* from the main menu (Fig. 4). You will then be prompted to confirm that you want to delete your fingerprint. If you select **OK**, on the next screen, you will be required to verify your fingerprint. If your fingerprint is successfully verified, the encrypted template will be deleted. Verify your fingerprint using the procedure under “*Capturing a Fingerprint*” in this document.

## ICE Unlock Settings

ICE Unlock has user settings that can be used to control the behavior of ICE Unlock:

**Disable Lock Screen** – The main menu page has an **ON/OFF** switch that will enable or disable the lock screen.

**Screen Auto-Off Lock Delay** – sets the amount of time delay for the lock screen to activate after the screen turns off.

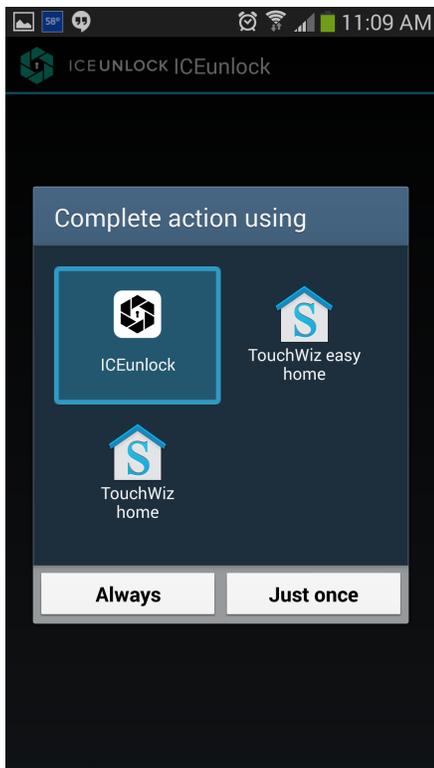


Fig. 3- Set Complete action using ICE Unlock - Always.

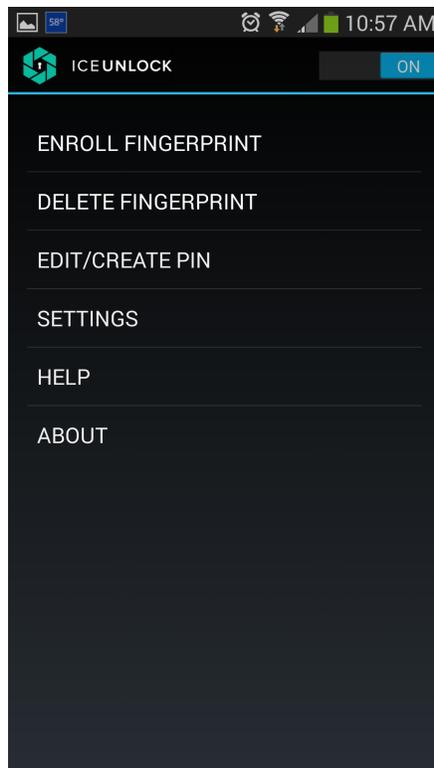


Fig. 4 - The main menu of ICE Unlock.



### ABOUT SAVING FINGERPRINTS

Fingerprints are encrypted and secured safely on the device as templates that only ICE Unlock can access.

However, if you have rooted your phone, then any application you allow to have root access can potentially access your encrypted fingerprint template file.

It is recommended to not root your phone, and to encrypt the contents of your disk to avoid compromising this file as it will allow your device to be unlocked.



ICE UNLOCK

## FREQUENTLY ASKED QUESTIONS

**Q:** *How do I deal with multiple home screens?*

**A:** Devices such as the Samsung Galaxy S IV have a “Starter” mode that adds an extra home screen selection. You can specify which one you would like to use by going to Settings->My device->Home screen mode and selecting which screen you would like to use when ICE Unlock unlocks.

**Q:** *How do I prevent the emergency call button from disabling ICE Unlock?*

**A:** Due to FCC rules, an emergency call button must be provided for applications that block access to the stock dialer. Emergency numbers, such as “911” may only be dialed using the stock dialer. ICE Unlock must give up control in order for the dialer to be accessible.

**Q:** *How do I know if I should accept or reject a fingerprint image?*

**A:** Look at the images below. If your fingerprint looks like the top image, it is acceptable. The bottom image should be rejected.



*Fig. 5 - This is an example of a low-quality fingerprint image that should be rejected.*



*Fig. 6 - This is an example of a high-quality fingerprint image that should be accepted.*



## ABOUT ONYX™

ONYX is the flagship product of Diamond Fortress Technologies, and the engine that drives the ICE Unlock app. ONYX quietly works behind the scenes to support secure, frictionless, anytime/anywhere authentication. It becomes the de facto means of proving you are who you say you are for all mobile-based business to business or business to consumer or personal interactions.

ONYX is touchless so you do not have to worry about the sensor getting dirt or oil build up over time. This build-up causes reliability issues with touch-based sensors.

Another inherent problem with touch-based sensors is pressure. Various amounts of pressure applied to a touch-based sensor can distort your fingerprint. ONYX's touchless approach removes pressure from the equation. Too much or too little pressure can degrade the performance of touch-based sensors.

We can reliably enroll 99% of the population - regardless of age or skin pigmentation.

In lab testing, ONYX has the best FAR/FRR/FTE specification among all competing fingerprint biometric technologies. Images we capture from a mobile device's camera are enhanced with our software resulting in more accurate fingerprint rendering and identification.

If your finger is dirty or it has a scratch, ONYX will still capture your fingerprint. Our software compensates for distortion by allowing adjustments in tolerance levels. If by default we are scanning 100 data points, we can lower the amount ONYX scans and still get a reliable match.

Mobile device manufacturers already have huge research and development departments working to constantly make their cameras better, allowing them to do the hardware improvements. This allows us to concentrate on making our software better and ensuring it is compatible with the latest camera enhancements.

By putting our focus on software, not hardware, we are positioned to take advantage of emerging technologies. In the near future, other innovations such as 3D cameras, infrared technology, and ultrasonic sensors may allow Diamond Fortress Technologies to improve ONYX in ways never before thought possible.

# 99%

ENROLLMENT RATE

*\*Although ICE Unlock only runs on Android devices, the ONYX engine can run on iPhones, iPads, and Windows phones too.*

# TIPS, TRICKS, AND TROUBLESHOOTING

## Having problems taking a quality image?

- Two Fingers Rule – Use two fingers in your image, like in Fig. 7.
- Thumb Anchoring – To improve stability, position your thumb on the side of your phone as shown in Fig. 8.
- Fill Ellipse – Make sure the distal pad of the finger fill the oval.
- Do not include first joint. The application works better when the image doesn't contain the creases that make up the first joint. See Fig. 9 for an example.
- While walking... - Stop walking.
- Hold the device and your finger as still as possible while the camera is focusing and capturing.

## Having problems unlocking with your fingerprint?

- Try re-enrolling your fingerprint.
- Try unlocking using your PIN.
- Also see Having problems taking a quality image?



Fig. 7 - Use two fingers for a higher quality image.



Fig. 8 - Position your thumb to provide stability when capturing.



Fig. 9 - ICE Unlock works better without these creases inside the oval.

## Having problems downloading or installing from the Play Store?

- **Cannot find ICE Unlock in the Play Store?**  
ICE Unlock will only show up in the Play Store if you have a compatible device. If your device is not currently compatible, ICE Unlock will not be in your search results.
- **Installation will not start or hangs up while downloading?**  
Check your internet connection.  
Is the Play Store having problems?  
Try again at a later time.
- **Cannot transfer APK file from computer to mobile device?**  
*Does your device appear in your computer's file browser?*  
If not, please install the correct drivers for your device.  
*Does your device have enough free space for the APK?*  
If not, delete unnecessary files until there is enough room.  
*Is the USB cable plugged in securely?*  
Check. And if not, plug cable in securely.
- **APK file is on the device, but having problems installing?**  
The downloaded APK file may be corrupt. Re-install from the Play Store.

## Having problems with settings?

- There is an ON/OFF switch at the top of the main menu to disable or enable ICE Unlock.
- The lock delay is the time between the screen turning off and ICE Unlock activating. It is not the time it takes for the screen to turn off.

## Having problems unlocking while driving?

If you have noticed, it is somewhat difficult to use ICE Unlock while driving a car. This is a security feature of ICE Unlock. While you can easily answer an incoming call, it is difficult to unlock your device so you will not be tempted to dial, text, or surf the internet while you are driving. However, in an emergency, you can still unlock your phone using your PIN. We do not recommend unlocking with your fingerprint while driving.

## Having PIN problems?

- Your PIN must be a minimum of 4 digits, but you can make your PIN as long as you want. We recommend using 6-8 digits for added security.
- If you forget your PIN, unlock using your fingerprint.

## Flashlight

As an additional feature, ICE Unlock can use your rear illumination as a flashlight.

## Receiving error: "Unfortunately, ICE Unlock has stopped working."

If this is the first time you have received this message, restart your device. If you get this message repeatedly, uninstall ICE Unlock and then reinstall.

## LED goes into "strobe" mode. (Continuous flashing)

If your device is stuck in strobe mode, press the button that makes your device go to sleep, and then wake it up again, or remove the battery for a second if possible.

**Note:** ICE Unlock will behave differently when answering a phone call from the idle state, i.e. when the screen is off. If "None" or "Swipe" is chosen then ICE Unlock will not start immediately after answering the phone, so that you will be able to access the dialer or any other application.

ICE Unlock is not a true security screen replacement, as that is not currently possible with the Android operating system.

ICE Unlock does have many features of a security screen and can serve this purpose. No applications will be visible, but the status bar and the information it contains will still be displayed.

Diamond Fortress Technologies has the capability to integrate ONYX technology into a custom solution to meet your needs.



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