

# WELCOME

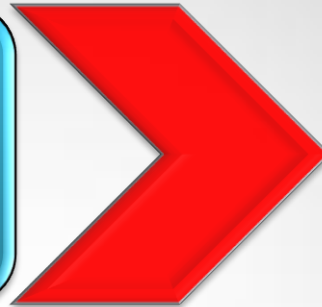
# Mobile Applications Testing



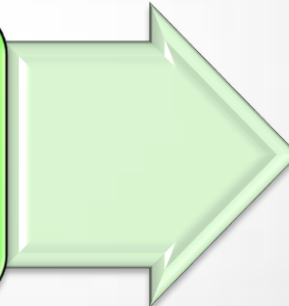
# Devices :

## ROOTING : ANDROID OS

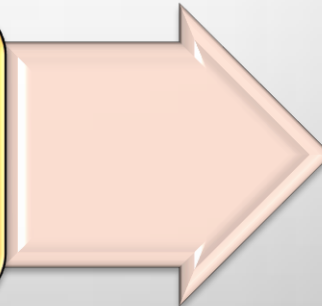
Rooting is the Android equivalent of jailbreaking, a means of unlocking the operating system



you can install unapproved apps, deleted unwanted bloatware,



update the OS, replace the firmware or customize anything



# Devices : TETHERING

## TETHERING

connecting one device to another

In the context of mobile phones and tablet computers, tethering allows sharing the Internet connection of the phone or tablet with other devices such as laptops

Connection of the phone or tablet with other devices can be done over wireless LAN (Wi-Fi), over Bluetooth or by physical connection using a cable, for example through



# Mobile Ecosystem

Mobile World Statistics

Carriers/Service Providers

Network

Manufactures

Devices

**Platforms/OS**

Frameworks

API-Apps

Services



# Platforms / OS

**Mobile Application Development Platform (MADP)** is *a type of software that allows a business to rapidly build, test and perhaps deploy mobile apps for SmartPhone or Tablets*

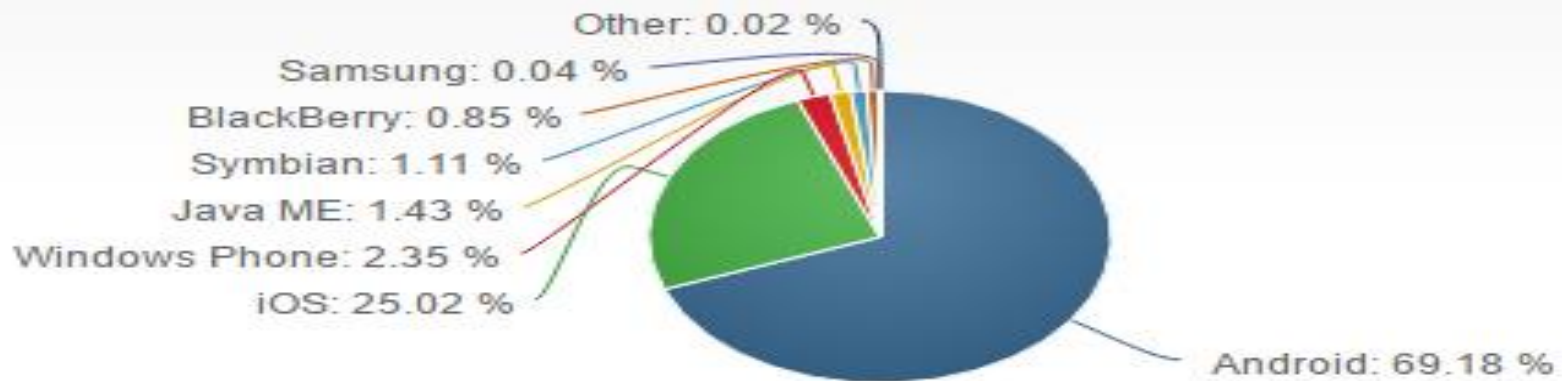
**Mobile Operating System (or mobile OS)** is *an operating system for SmartPhones, tablets, PDAs, or other mobile devices*



# Platforms / OS Market Share 2016

Period	Android	iOS	Windows Phone	Others
2015Q3	84.3%	13.4%	1.8%	0.5%
2015Q4	79.6%	18.6%	1.2%	0.5%
2016Q1	83.4%	15.4%	0.8%	0.4%
2016Q2	87.6%	11.7%	0.4%	0.3%

The worldwide SmartPhone market grew 0.7% year over year in 2016Q2, with 344.7 million shipments, according to data from the International Data Corporation ([IDC](#)) [Worldwide Quarterly Mobile Phone Tracker](#).



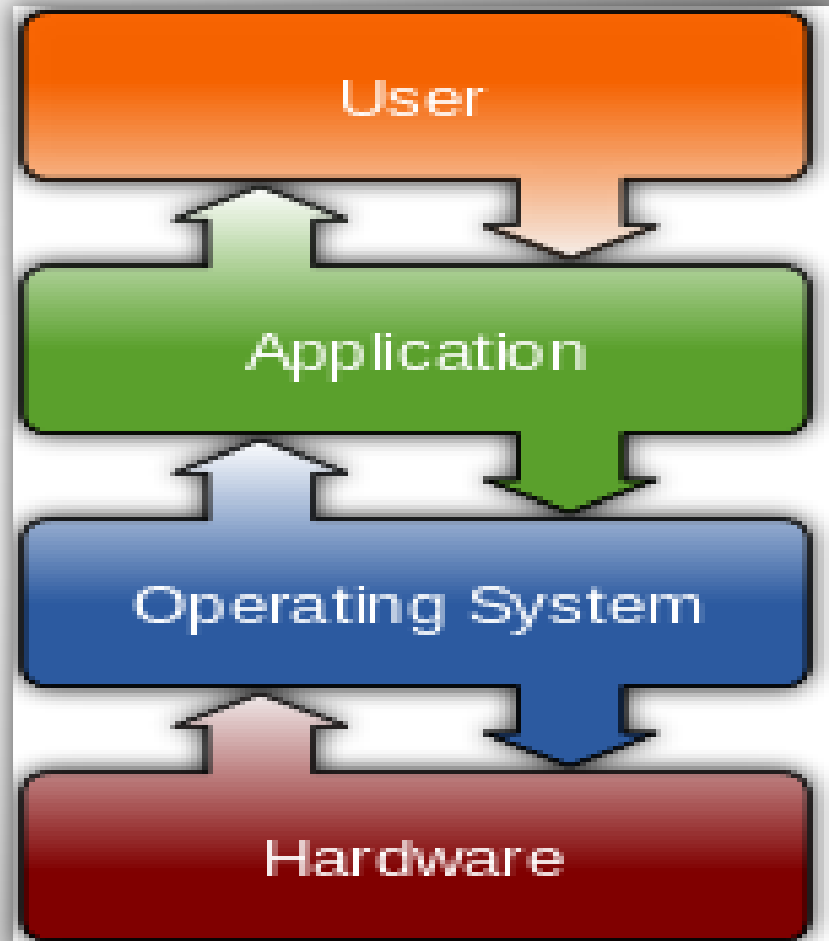
# Platforms / OS : Explained

A computing platform is the “stage” where computer programs run.

An operating system sits between applications and hardware, managing how applications access hardware and software resources.

This means that an operating system is a kind of computing platform, but a computing platform is not necessarily a kind of operating system.

A runtime library can also be a computing platform.



# Platforms / OS Licensed

*Licensed platforms are sold to device makers for non-exclusive distribution on devices.*

*The major goal of Licensed Platforms was to create a common/standard platform of Application Programming Interfaces (APIs) development that work similarly across multiple devices with the minimum effort required to adapt the device differences.*

**Example:** Windows Mobile, JME - Sun Microsystems/Oracle; Brew MP – HTC Smart Phone or carrier's firmware, etc



# Platforms / OS Proprietary

*A proprietary operating system is one which a particular company conceptualizes, designs, develops and sells. Examples of proprietary operating systems are Windows and Mac OS X*

## Pros

- ✓ Simplified user experience making the overall user experience simpler and smoother.
- ✓ User multiplier effect based on increasing number of people already using it.

## Cons

- ✓ Limited Customizability
- ✓ Interoperability Operating systems are often designed to work with a fixed set of hardware specifications



# Platforms / OS Open Source

*Open source is a philosophy which suggests that the source code behind something should be freely available to the public.*

## Pros

- ✓ The main advantage is that it allows end users to directly interact with the source, potentially modifying it to suit their wishes.
- ✓ Encourages constant development and innovation, while also creating a community of shared information.

## Cons

- ✓ Vulnerable to malicious users
- ✓ Might not be as user-friendly as commercial versions
- ✓ Don't come with extensive support





# Platforms / OS SUMMARY

## *Licensed*

- JME
- BREW
- LiMo

## *Proprietary*

- OS X
- BB QNX
- Windows Phone
- bada
- Symbian (Eclipse Lic.)
- webOS

## *Open Source*

- Android-OHA
- Tizen
- Maemo
- MeeGo
- Linux
- Alternative



# Platforms / OS : Open Source vs Proprietary

## Open-Source Software can replace proprietary software



for



Operating Systems



for



Office applications



for



Image editing



for



Internet browser



for



Video & audio playback



for



Ebooks

# Platforms / OS : What do I HAVE ?



# Platforms / OS :

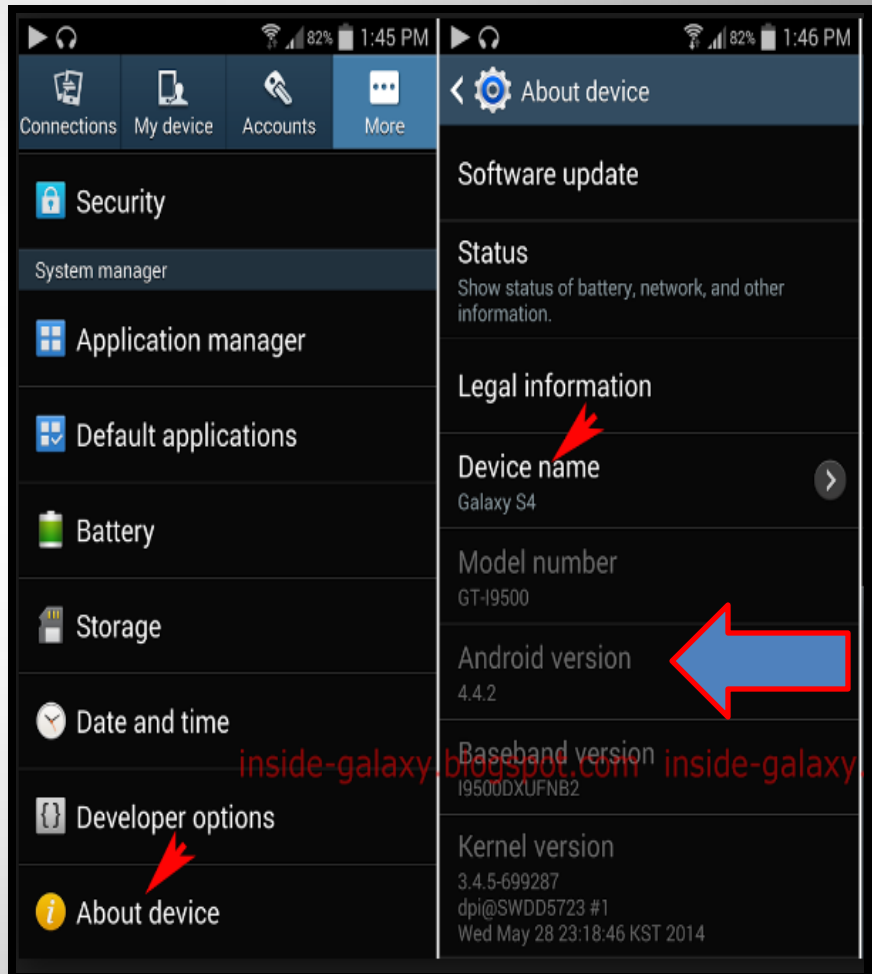
## How to find my Android OS Version ?



**Open your  
device  
SETTINGS**

**Scroll to  
ABOUT  
PHONE**

**Look for line  
which says  
"Android  
Version"**





# Platforms / OS :

## How to find my Apple iOS Version ?

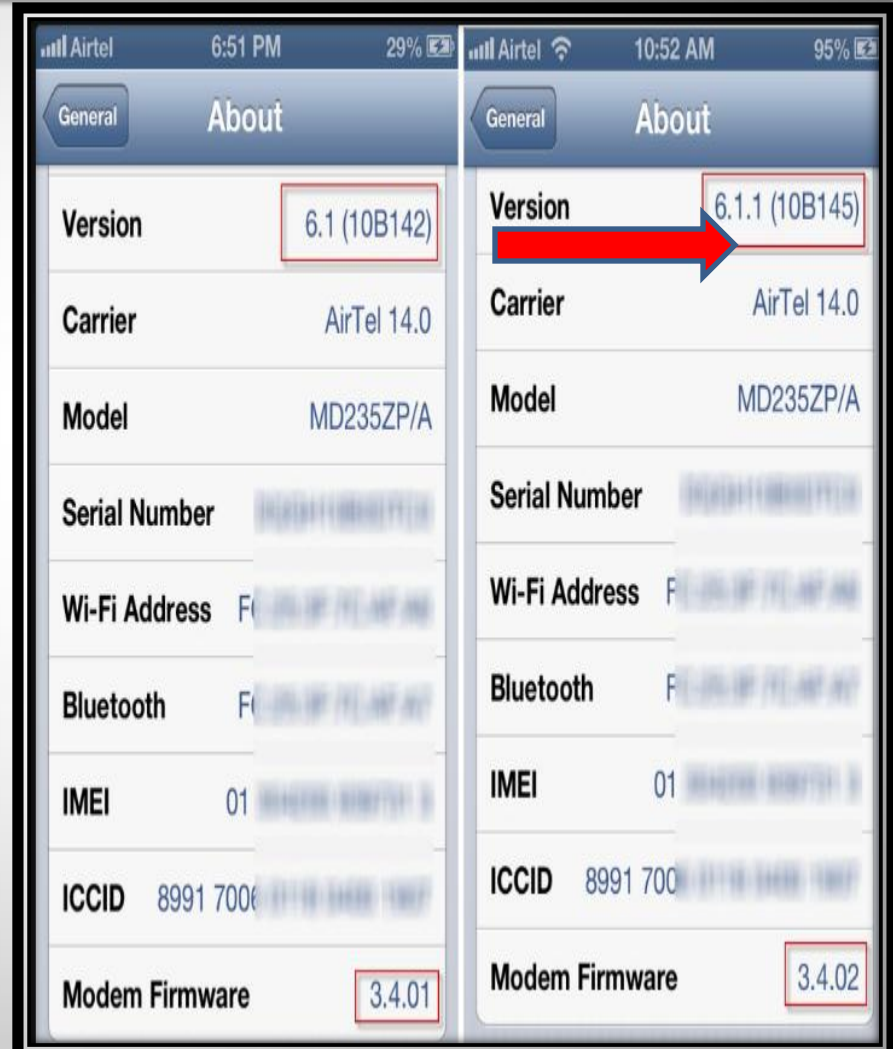


Open the  
Settings

Tap 'General'

Tap 'About'

Scroll down  
for 'Version'



# Platforms / OS :

## How to find my WinPhone OS version ?



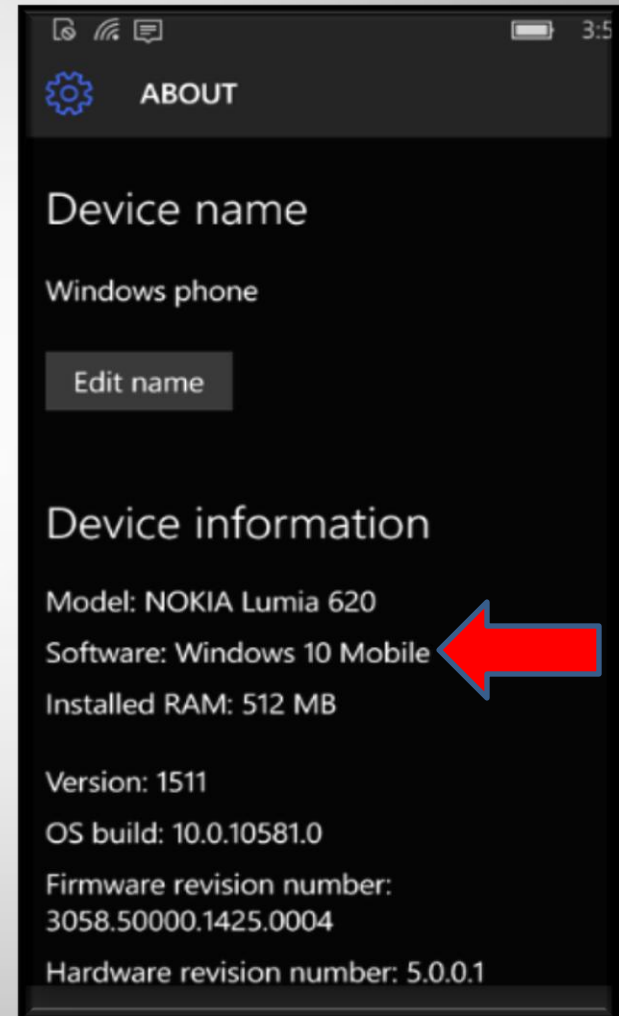
Windows Phone home screen

Swipe left to reveal more icons

Scroll down and tap 'SETTINGS'

Scroll down and tap 'ABOUT'

'About' screen, tap MORE INFO





# Platforms / OS :

## BLACKBERRY current ver : 10.3.2

BlackBerry (RIM) is a proprietary operating system

It is tailor-made for business, with functionality taking a seat over personality or appearance

Its main focus is on messaging, email and other communication features.



# Platforms / OS :

## Windows Phone current ver : 10.0

- Windows Phone (WP) is a family of mobile operating systems developed by Microsoft for SmartPhones

Replacement successor to Windows Mobile and Zune  
WP features a new UI derived from Metro design language.



# Platforms / OS :

## ANDROID

### ANDROID

*is a mobile **operating system** developed by GoogleBased on the Linux Kernel and designed primarily for touch screen Mobile Devices such as : SmartPhones and Tablets.*

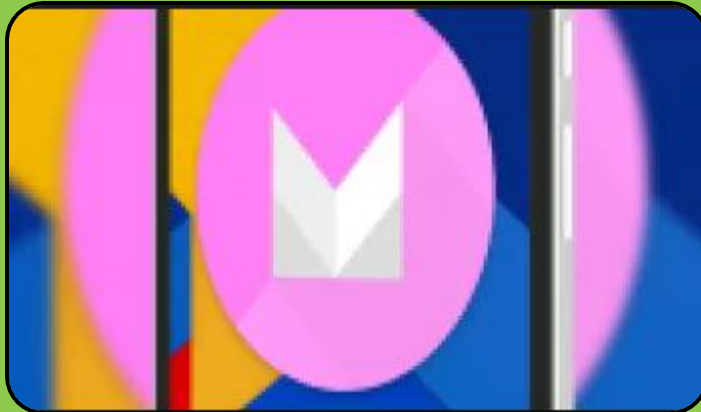


# Platforms / OS :

**ANDROID version 6.0-6.0.1**

**API level 23**

**“MARSHMALLOW”**



Officially released in  
October 2015





# Platforms / OS :

**ANDROID version 7.0-7.1.2**  
**API level 24-25**

## **Android 7.0-7.1.2** **"Nougat"**

*Officially released on August 22, 2016 and 7.1.2 released April 7<sup>th</sup>, 2017*

Nexus 5X

Nexus 6P

Nexus 6

Nexus 9

Nexus Player

Pixel C

Android One General Mobile 4G



# Platforms/OS

**ANDROID version 8.0**

**API level 26 ( info as of 8/25/17)**

## **Android 8 “OREO”**

*Officially released on  
**August 21, 2017***

**Nexus 5X**

**Nexus 6P**

**Google Pixel**

**Google Pixel XL**

**Pixel C**

**Nexus Player**



**More devices would be covered in coming months**



# Platforms / OS :

## ANDROID HISTORY 2009-2017



# Platforms / OS : ANDROID OS HISTORY

Latest : **OREO 8.0** Aug21, 2017 API level 26

Code name	Version number	Initial release date	API level
N/A	1.0	September 23, 2008	1
	1.1	February 9, 2009	2
Cupcake	1.5	April 27, 2009	3
Donut	1.6	September 15, 2009	4
Eclair	2.0 – 2.1	October 26, 2009	5 – 7
Froyo	2.2 – 2.2.3	May 20, 2010	8
Gingerbread	2.3 – 2.3.7	December 6, 2010	9 – 10
Honeycomb <sup>[a]</sup>	3.0 – 3.2.6	February 22, 2011	11 – 13
Ice Cream Sandwich	4.0 – 4.0.4	October 18, 2011	14 – 15
Jelly Bean	4.1 – 4.3.1	July 9, 2012	16 – 18
KitKat	4.4 – 4.4.4	October 31, 2013	19 – 20
Lollipop	5.0 – 5.1.1	November 12, 2014	21 – 22
<b>Marshmallow</b>	6.0 – 6.0.1	October 5, 2015	23
<i>Nougat</i>	7.0 - 7.1.2	<b>October 14, 2016</b>	24 - 25
Oreo	8.0	August 21, 2017	26

# Platforms / OS :

## ANDROID FILE FORMAT .APK

- *Android application package (**APK**) is the package file format used by the Android operating system for distribution and installation of mobile apps and middle-ware*

### What is an APK File?

- Just like Windows (PC) systems use an **.exe** file for installing software, Android does the same. An **APK** file is the file format used for installing software on the Android operating system.

# Platforms / OS :

## iOS

- *iOS (originally iPhone OS) is a mobile operating system created and developed by Apple Inc. and distributed exclusively for Apple hardware*
- It is the operating system that presently powers many of the company's mobile devices, including the iPhone, iPad, and iPod touch.





# Platforms / OS :

iOS latest version 11.0.2 ( as of 10/03/2017)

- Version 11 was released on September 19, 2017
- Version 11.0.1 was released September 26, 2017
- Version 11.0.2 was released October 3, 2017

[https://en.wikipedia.org/wiki/iOS\\_version\\_history](https://en.wikipedia.org/wiki/iOS_version_history)



# Platforms / OS :

iOS latest version 10.X

<http://www.mobiloitte.com/blog/evolution-iphone-os-1-ios-10-journey-ios>



iPhone OS 1  
(1<sup>st</sup> Generation)



iPhone OS 2 (3G)



iPhone OS 3 (3GS)



iOS 4 (iPhone 4)



iOS 5 (iPhone 4S)



iOS 6 (iPhone 5)



iOS 10 (iPhone 7)



iOS 9 (iPhone 6S)



iOS 7 (iPhone 5S)



iOS 8 (iPhone 6)

## Evolution

OS to iOS 10 - Journey of iOS

...



# Platforms / OS :

## Version Name HISTORY → iOS



1.0:Alpine (1.0.0 - 1.0.2: Heavenly)	6.0: Sundance
1.1: Little Bear	6.1: Brighton
1.1.1: Snowbird, 1.1.2: Oktoberfest	7.0: Innsbruck
2.0: Big Bear	7.1: Sochi
2.1: Sugarbowl	8.0: Okemo
2.2: Timberline	8.1: OkemoTaos
3.0: Kirkwood	8.2: OkemoZurs
3.1: Northstar	8.3: Stowe
3.2: Wildcat (iPad only)	8.4: Copper
4.0: Apex	9.0: Monarch
4.1: Baker	9.1: Boulder
4.2: Jasper (4.2.5 - 4.2.10: Phoenix)	9.2: Castlerock
4.3: Durango	9.3: Eagle
5.0: Telluride	10.0: Whitetail
5.1: Hoodoo	10.1: Butler
	10.2: Corry
	10.3: Erie
	11.0: Tigris

# Platforms / OS :

## iOS (iPhone) Architecture (simplified)

### Cocoa Touch Layer

It is a top layer of the iPhone OS stack and it contains the frameworks that are most commonly used by iPhone application developers.

### Media Layer

It is the second layer from the top of the stack. It provides the iPhone OS with audio, video, animation and graphics capabilities.

### Core Services Layer

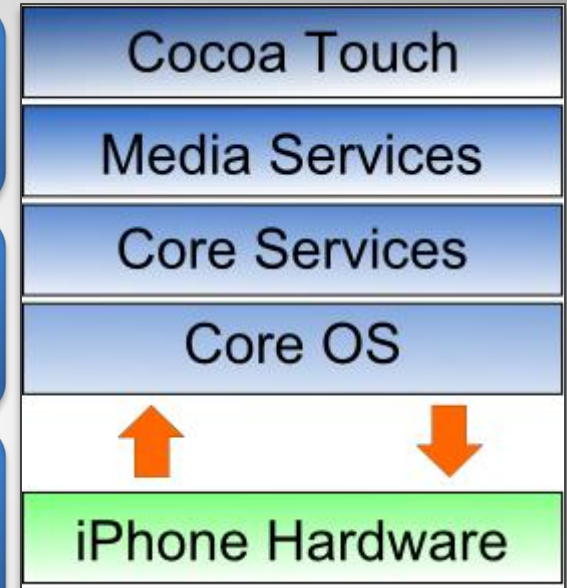
It is the third layer from the top of the stack. The iPhone Core Services layer provides much of the foundation on which the above layers are built.

### Core OS Layer

The Core OS Layer is the bottom layer of the iPhone OS stack and sits directly on top of the device hardware. This layer provides a variety of services

### iPhone Hardware

Hardware devices are managed by iPhone OS and provides the technologies needed for implementing native applications on the phone.



## Platforms / OS :

### iOS .IPA

- An **.ipa** file is an iOS application archive file which stores an iOS app.
- Each **.ipa** file includes a binary for the ARM architecture and can only be installed on an iOS device.
- Files with the **.ipa** extension can be uncompressed by changing the extension to **.zip** and unzipping.

# Platforms / OS :

## ANDROID vs IOS : SUMMARY

Category	Google Android	Apple iOS
License - Source	Open Source	Close - Proprietary
Company	Open Handset Alliance/Google	Apple
OS Platform	Linux	OS X – Unix (Darwin)
Programming Language	Java <div data-bbox="948 622 1151 701"> </div>	Objective-C, Swift 3.0
Virtual Machine	Dalvik VM	None
Package Manager	APK – Google Play/Play Store	iTunes (since iOS 6 – iStore)
Carriers	AT&T, Verizon, T-Mobile, Sprint, MetroPCS, Virgin, 96% out of 369 US carriers	Apple Store, AT&T, Verizon, Sprint, Virgin Mobile, Cricket + 10 regional carriers
Life Battery	Moderate	Advance high
Browser Engine	WebKit: Web, Opera Mini, Dolphin, <b>Chrome</b>	WebKit: Safari, Opera Mini, <b>Chrome</b>



# CyanogenMod and Lineage OS

( CM discontinued as of Jan, 2017)

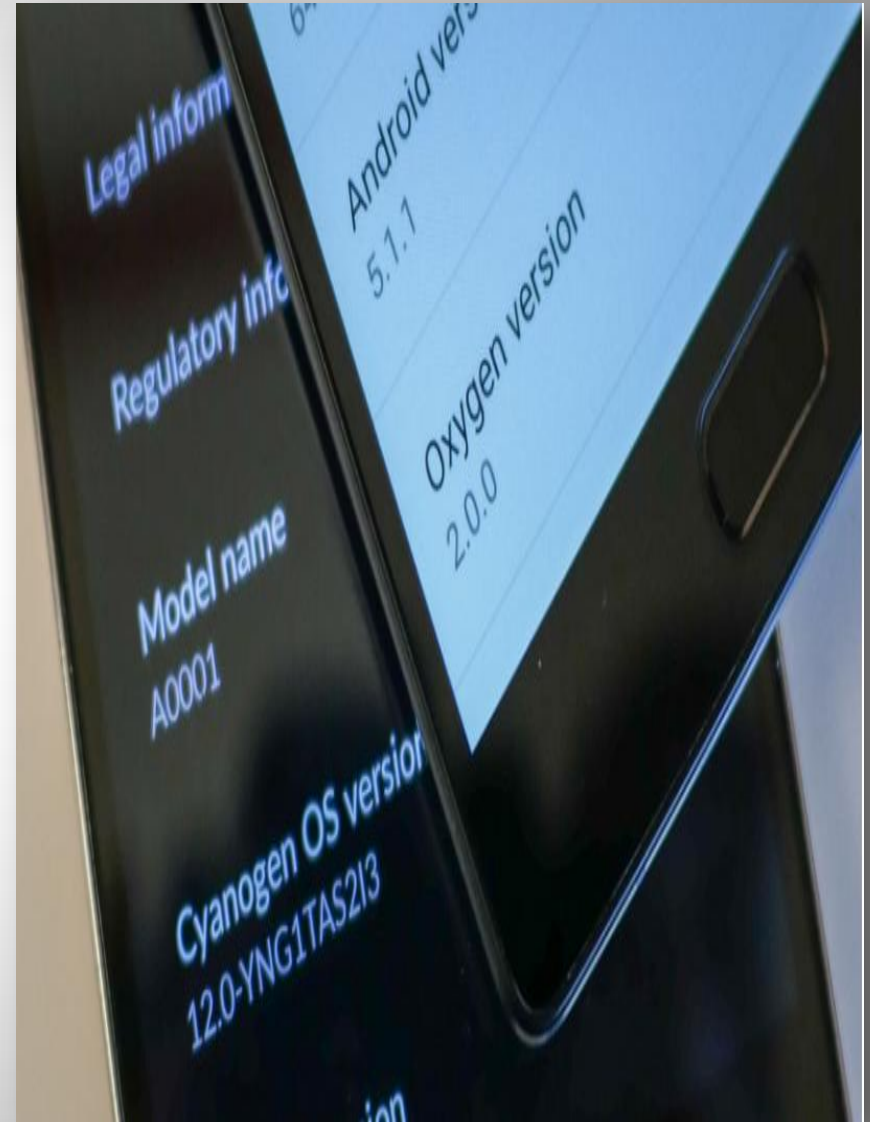


# CyanogenMod and Lineage OS

## What is it ?

CyanogenMod is an enhanced open source firmware distribution for Smartphones and tablet computers based on the Android mobile operating system.

It offers features and options not found in the official firmware distributed by vendors of these devices.



# CyanogenMod and Lineage OS

CYANOGEN OS

VS

ANDROID

About 1-2 times a year, the vanilla Android operating system (known as AOSP, or the Android Open Source Project) is internally developed, then released to the public, by Google. They provide the source code to anyone who wants to download it.

The CyanogenMod community, comprised mostly of unpaid volunteers and enthusiasts from around the world, takes this newest Android code and "ports" it to dozens of new and older (aka "legacy") devices.

# CyanogenMod and Lineage OS

In many cases, CyanogenMod may increase performance and reliability compared with official firmware releases.

CyanogenMod is developed as free and open source software based on the official releases of Android by Google, with added original and third-party code.

## Features supported

**Native Theming**

**FLAC Audio Codec**

**Large Access Point Name List**

**Openvpn Client**

**Enhanced Reboot Menu**

**Wi-fi**

**Bluetooth**

**USB Tethering**

**CPU Overclocking**

**Other Performance Enhancements**

**Soft Buttons And Other "Tablet Tweaks"**

**App Permissions Management**

**Other Interface Enhancements**



# CyanogenMod and Lineage OS

## PROS

**Remove Unwanted Programs ("Bloatware") Installed By Your Carrier**

**Receive More Frequent Security Updates**

**Have Access To The Current Version Of Android - Most Carriers Take Months To Update Devices**

**Better Performance**

**Extra Features**

**Cyanogenmod Has Proven To Be More Stable Than Many Official Roms.**

## CONS

**Limited Or Voided Warranty After Modifying**

**New Security Risks.**

**Non-stock Firmware *Could* Contain Malicious Code**

**Stability Issues May Arise When Using An Experimental Operating System.**

# CyanogenMod and Lineage OS

## FEATURE LIST

**CM Updater**

**Privacy Guard**

**Global Blacklist**

**Quick Setting Ribbon**

**Quick Settings Config**

**Them**

**Trebuchet**

**Status Bar Behavior**

**CM File Manager**

**Display and Lights**

**Profiles**

**Button Configuration**

**Navbar**

**AudioFX**

**Tethering**

**Developer Tools**

**Root Access**

**Superuser: Advanced Device  
controls**

**SMS Rate limit**