

WELCOME

Mobile Applications Testing



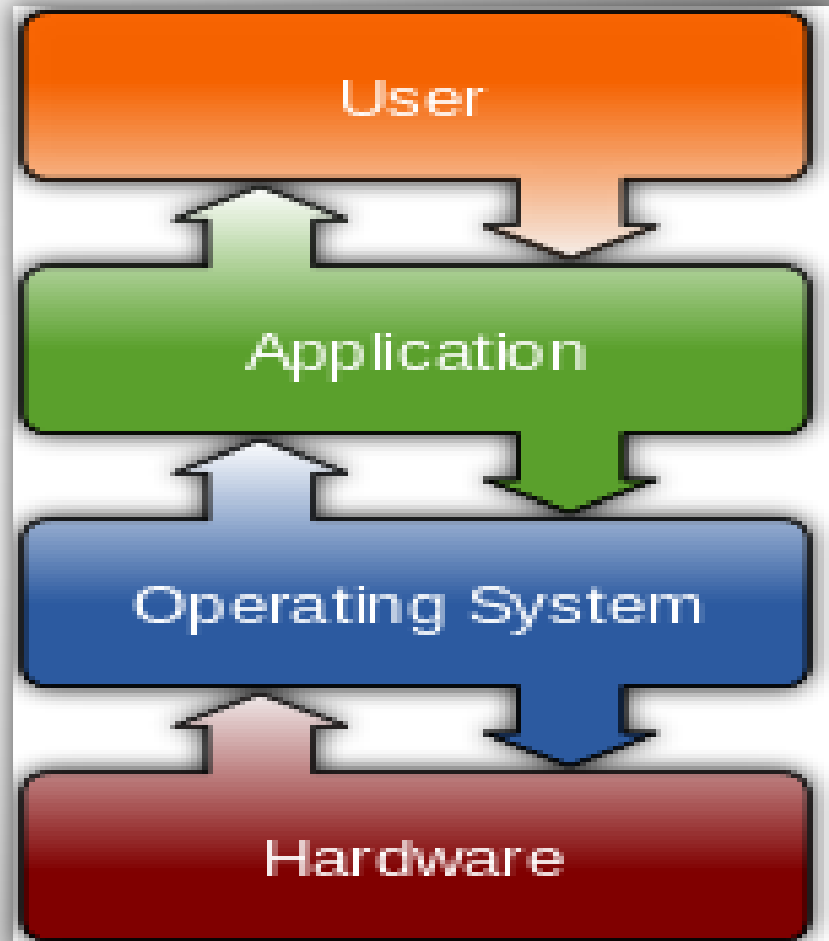
Platforms / OS : Explained

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 : In short

The terms **PLATFORM** and **OPERATING SYSTEM** mean almost the same thing. □

An **OPERATING SYSTEM** lets your computer run and control its most basic functions, but the platform is something, upon what programs/applications (like calendar or web browsers) can be installed and used.

Think of **PLATFORM** as a broader term denoting the difference between Mac and Windows in general, while **OPERATING SYSTEM** is more often used to when referring to specific versions of Windows or Mac

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 :

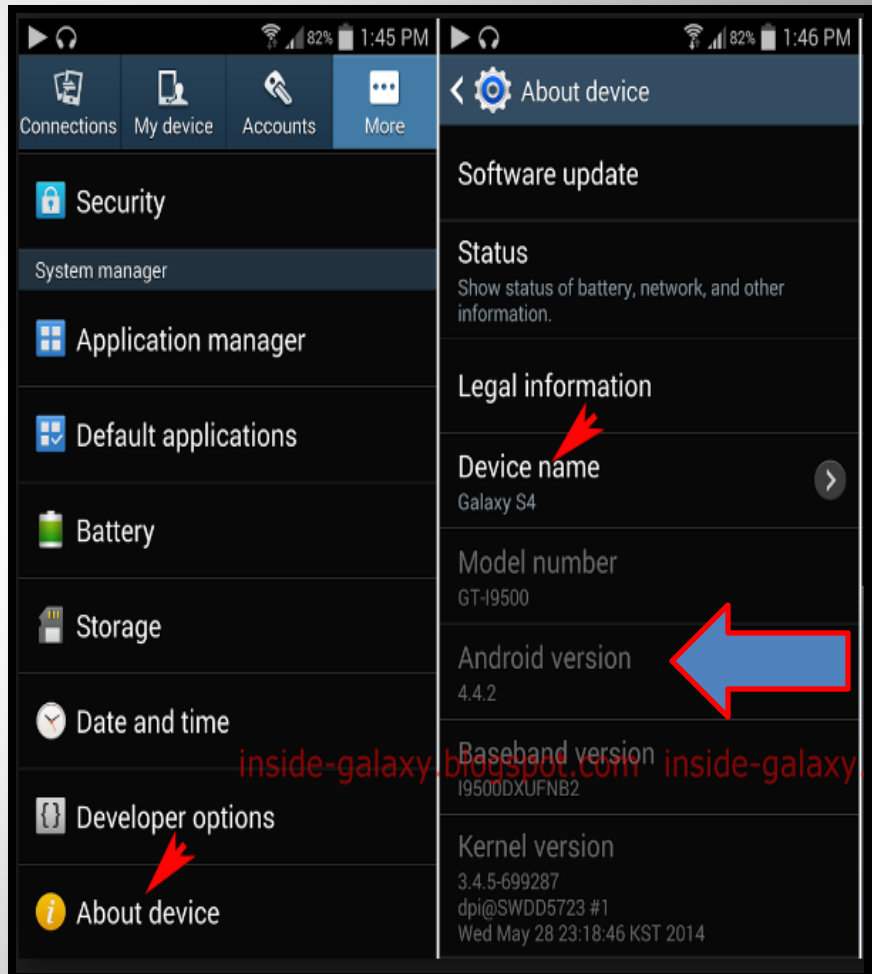
How to find my Android OS Version ?



**Open your
device
SETTINGS**

**Scroll to
ABOUT
PHONE**

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



Platforms / OS :

How to find my Apple iOS Version ?

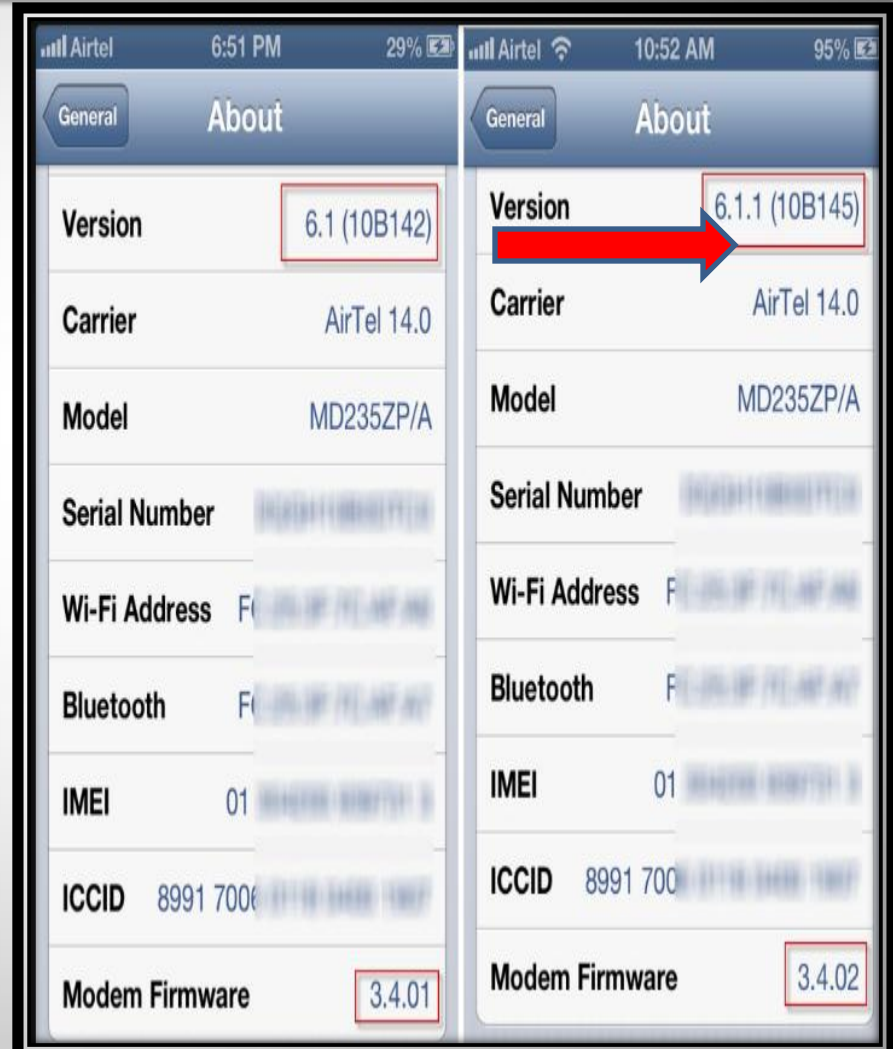


Open the
Settings

Tap 'General'

Tap 'About'

Scroll down
for 'Version'



Platforms / OS :

How to find my WinPhone OS version ?



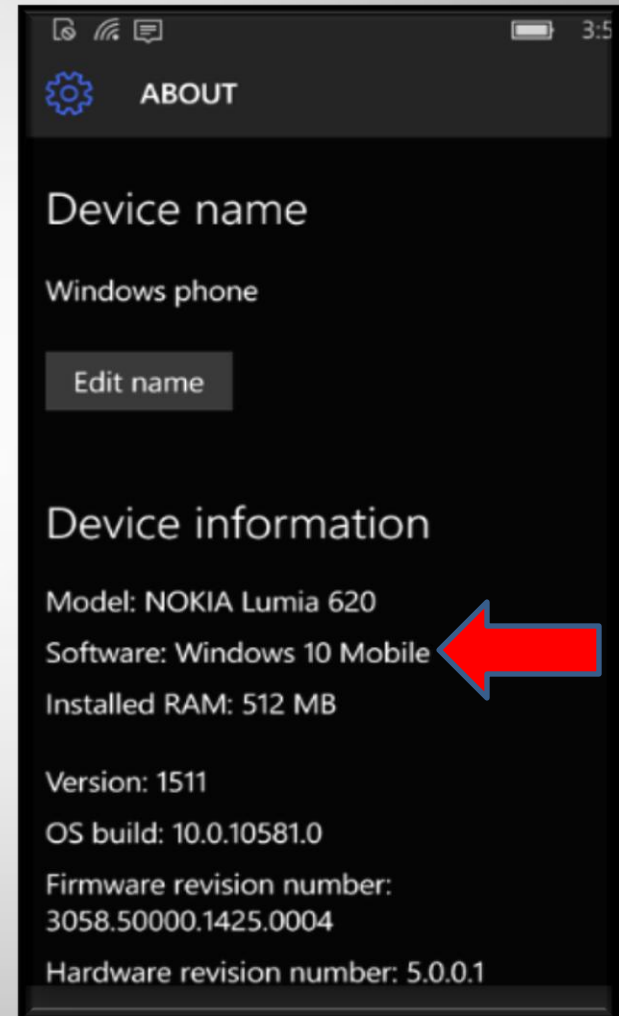
Windows Phone home screen

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.

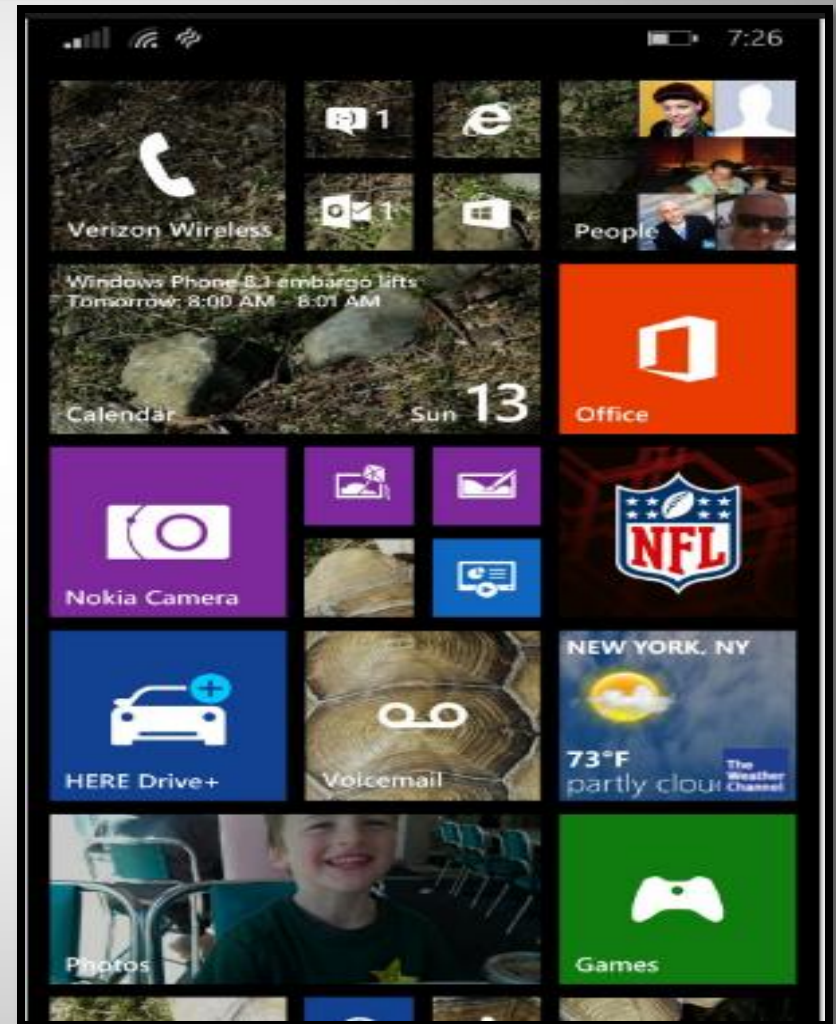


Platforms / OS :

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.*

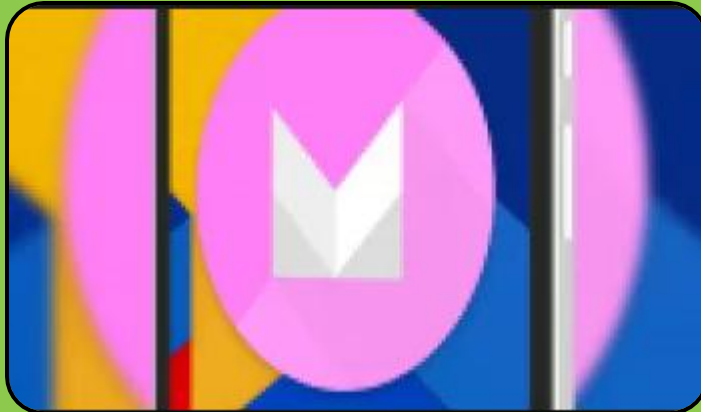


Platforms / OS :

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 7th, 2017

Nexus 5X

Nexus 6P

Nexus 6

Nexus 9

Nexus Player

Pixel C

Android One General Mobile 4G



Platforms/OS

ANDROID version 8.0-8.1

API level 26-27

Android 8.0 “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

04-2009



Android 1.5 Cupcake

09-2009



Android 1.6 Donut

11-2009



Android 2.0 Eclair

05-2010



Android 2.2 Froyo

12-2010



Android 2.3 Gingerbread

08-2017



Android 8.0 Oreo

08-2016



Android 7.0 Nougat

10-2015



Android 6.0 Marshmallow

02-2011



Android 3.0 Honeycomb

11-2011



Android 4.0
Ice Cream Sandwich

07-2012



Android 4.1 Jelly Bean

10-2013



Android 4.4 KitKat

11-2014



Android 5.0 Lollipop

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 ^[a]	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
Marshmallow	6.0 – 6.0.1	October 5, 2015	23
<i>Nougat</i>	7.0 - 7.1.2	October 14, 2016	24 - 25
Oreo	8.0 -8.1	August 21, 2017	26-27

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 11.2.5 (as of Jan 23, 2018)

Check current version before your Interview.
Versions are changing constantly.

- Version **11** was released on September 19, 2017
- Version **11.2.5** was released Jan 23, 2018

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
(1st 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

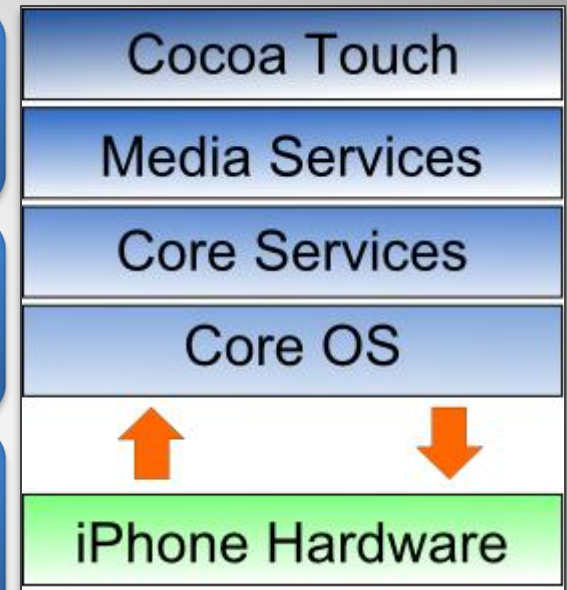
It is the third layer from the top of the stack. The iPhone Core Services layer provides much of the foundation on which the above layers are built.

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 and Kotlin 	Objective-C and Swift-4
Virtual Machine	Dalvik VM	None
Package Manager	APK – Google Play/Play Store	IPA – APP Store
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, Chrome	WebKit: Safari, Opera Mini, Chrome

CyanogenMod and Lineage OS

(CM discontinued as of Jan, 2017)

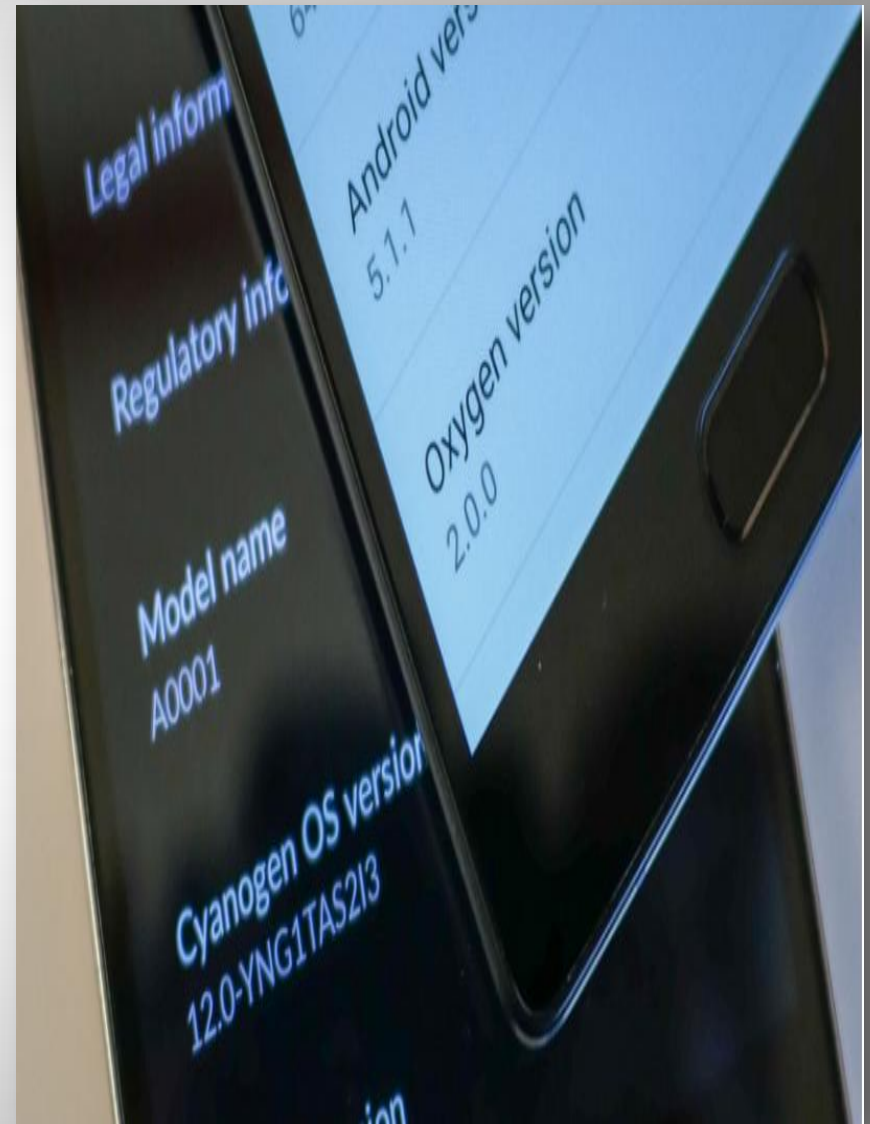


CyanogenMod and Lineage OS

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

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

CyanogenMod and Lineage OS

CyanogenMod is an aftermarket ROM.

It is a custom ROM based on AOSP, and has some nifty features of it's own. It is open source.

Cyanogen Inc. is a company which distributes CyanogenOS, a slightly more polished variant of CyanogenMod with certain device-specific features.

CyanogenOS is not open-source.

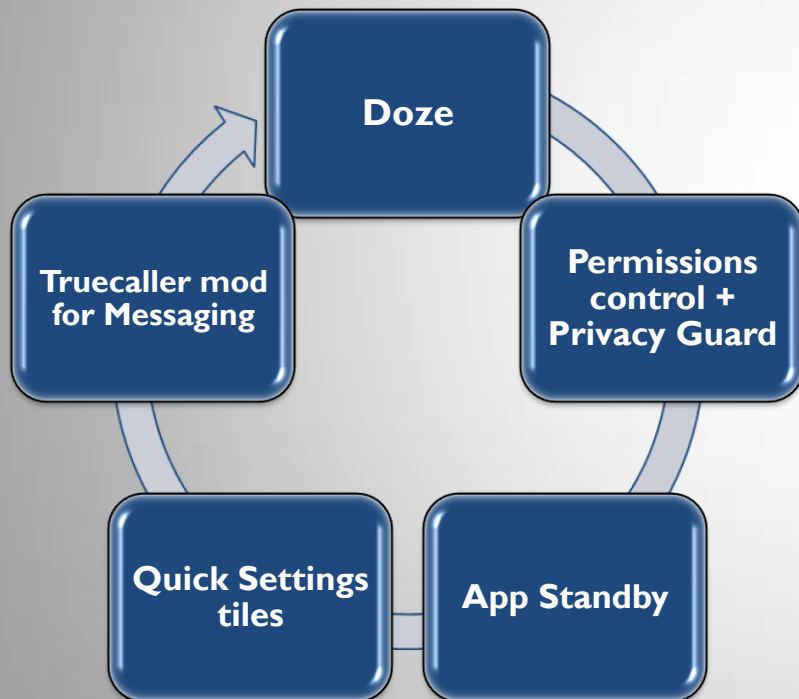
As of 12 August, 2017, LineageOS officially supports 178 devices including [Nexus](#) and [Google](#)-released devices..

L I N \equiv A G \equiv

CyanogenMod and Lineage OS

Latest Version **for all devices**

Marshmallow offers a number of useful features that CM and Lineage leverages, including:



Tastes like Marshmallow



Supported Devices : <http://www.ibtimes.co.uk/cyanogenmod-l3-0-full-list-devices-getting-official-stable-release-l550461>

CyanogenMod and Lineage OS

OS 14.1: Released November 09, 2016

Available for Selected Devices ONLY



- CM 14.1 is simply the latest version of CyanogenMod, based on the Android 7.1 Nougat source code.

Multi-window Mode

New System UI

Optimized Battery Management

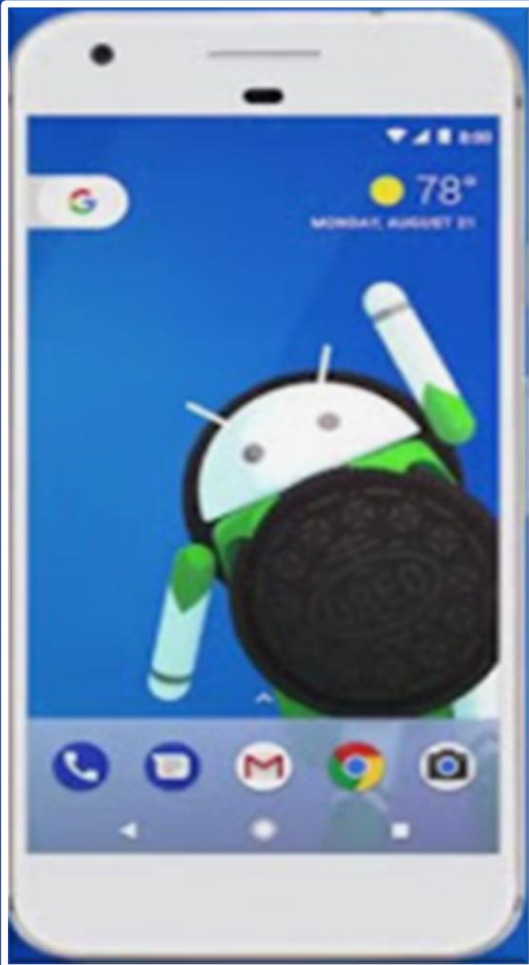
Pre-set AudioFX audio settings

Other Android 7.1 Features

Supported Devices : <http://www.cyanogenmods.org/official-cyanogenmod-14-1-cm14-1-devices-list/>

CyanogenMod and Lineage OS

OS 15 For OREO OS8 is not yet released



List of available devices

<http://www.lineageosrom.com/2017/03/los-15-list-of-devices-getting-lineage.html>

open wonder
android 8.0 oreo