

Google Android 4.1 Jelly Bean Take the Sleekest Leap In to the Future

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Abstract— Android Jelly Bean is the finest OS of the series being the legatee to Android 4.0 Ice-Cream Sandwich. It is a gradual development of the platform to the final destination which pledges meliorated performance and enhanced user experience. Novel features have been introduced for users and developers & it provides the most useful and one of the most prominent & fresh APIs for developers. Android 4.1 is also obtainable with an SDK platform for developers, to build apps for Jelly Bean. Android 4.1 is the swiftest and sleekest version of Android yet, credits to Google's Project Butter.

Android 4.1 drastically abates touch delitescence by operating touch to vsync schedule and real time prediction of the position of your finger. This causes an upshot which is more reactive and homogeneous touch rejoinder. Summing up, even after periods of dormancy, it applies a CPU infix elevation at the next touch event, to provide null occult. It is processed to rescue the primmest taste of performance to anyone who chooses it, in an effortless, intuitional interface. Moreover, it also adds up triple buffering in the vivid conduit, for more coherent rendering that makes everything perceive fluency, from paging to vivacity.

Index Terms: Address Space Layout Representation (ASLR), Android Open Source Project (AOSP), Application File Package (APK), Near Field Communication (NFC), Software Development Kit (SDK).

1 INTRODUCTION

Android 4.1 Jelly Bean was let off in market on June 27th 2012. It is based on kernel 3.1.10. The main intend of Android Jelly Bean is to improve the behavior, execution and interface. It is the sleekest, swiftest and responsive variant of android yet. This version of Android is more refined and has subtle improvements. The execution of Jelly Bean is "Project Butter", called by Google as it runs much more glibly. The arrival of Jelly Bean has resulted in the twirl rate of the phone far greater as compared to any former releases of Android.

Google has dramatically been successful in enhancing the operation rate of the Android OS by meliorating the rate at which process frames run and display refresh token. A new touch infix method that foresees the landing pattern of your fingers has been unfolded which gives the CPU an additional power strike when the screen is glided. Jelly Bean has the basic look and feel established in Android 4.0 but fine-tunes of details. It isn't as transformational of an ascent as ICS, but it's certainly sapid and significant and something that's going to thaw the ice cream sandwich aloof, gradually.

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2 HISTORY

Palo Alto – The place that saw the dawn of the era, which has been the heart & the soul of more than a million smart phones and tablet computers around the globe till date. Android is generally a Linux-based operating system that was born in October 2003 in the hands of Andy Rubin, Nick Sears, Rich Miner & Chris White. In 2005, Google acquired the Android incorporation and Andy Rubin led the team to develop a flexible, upgradable mobile device platform.

In 2007, The Open Handset Alliance, an association of giants in the mobile & computing market such as Intel, HTC, Samsung, Broadcom, Motorola, Nvidia, Qualcomm and of course Google itself was formed. This consortium aimed at developing free & candid standards for the mobile world.

The sustenance and growth of Android is held by the AOSP i.e. Android Open Source Project headed by Google. It also holds the onus for Android Compatibility Program which purveys to execute any third party app evolved as a result of Android SDK.

Coming to the versions of Android developed, Google has been very sweetly creative while naming them. The first step of Android was accounted with the rise of Android Beta followed by Android v1.0, which was the first mercantile variant in market. The fair of Android grew even diverse since the launch of dessert themed cards, the first one to be offered being the Cupcake, followed by the Donut as 1.6, Éclair as 2.0, Froyo (or Frozen Yoghurt) as 2.2, Gingerbread as 2.2, then a whole new version of 3.0 as the Honeycomb and

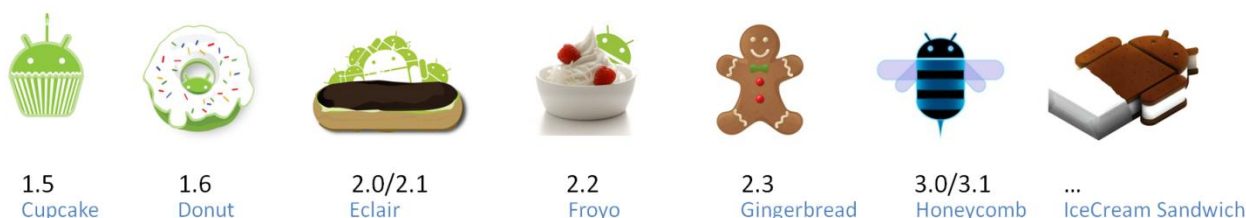


Fig. 1. Former Variants of Android in Market

the former taste as Ice Cream Sandwich 4.0. Fig. 1 shows the former taste variants of Android available in market.

3 NEED

Android 4.1 brings to us a world of the primmest of mobile experience so far. But, just like every other operating system, it requires regular updates and better features to present before its user a change for good. When it comes to Windows OS, it's a renowned fact that the heir is generally slower than its progenitor, which fortunately is not the case with Android. Android's latest version has proudly succeeded in its focus on improving the speed and accelerating the graphics, thereby improving their glibness and enhancing viability.

The user experience is bailed to prove the famous Law of Diminishing Marginal Utility wrong, as the users fall in love with the effortless touch experience ever available. Jelly Bean brings with itself a better data transfer feature named Android Beam, striking enough that carries an NFC with Bluetooth service to reach unparalleled transmission swiftness. It also bids farewell to the sluggish and slow response of the device after a certain period of inertness with its new infix processing boost process.

A refreshing change has been brought to the cadre of the notification bar so that it's possible to display expandable notifications for supported content and resizable widgets. An era of Language Support has come into existence with Jelly Bean so that a user can clasp his taste in his mother tongue. Last, but the most phenomenal feature of 4.1 is the Google Now app. Google App is an adjustable application that studies with the user. It has been evolved to adapt to the user's milieu and exhibit the most pertinent report depending on the location and applications entered by the user. It acts like Apple's SIRI, the famed personal digital assistant.

4 ARCHITECTURE

As a user's vision sees Jelly Bean, one is pertained only about the aggregate fulfillment and reaction time, but when one needs to really know what gives Jelly Bean that extra edge over all others, a programmer's view is most substantial. As we go in abyss of the study of the architecture, we find what makes it the sleekest Google platform ever. Google has introduced the concept of triple buffering which helps produce flicker-free graphical execution possible. Moreover, the graphics are updated at a frame rate of 16 milliseconds which provides availability of this feature to the apps through the animation carcass. The touch traits and the video frames have been fastened together by providing synchronization between the vsync signals and touch [1]. As we see through Jelly Bean, we feel the taste of something new called **SysTrace** which also helps in what Google aims for i.e. sleeker, swifter and even better. **SysTrace** succors in producing an overall imprint of all the processes befalling in the system by congregating data from the Linux nucleus. The notion of piled time succession graphs is used for data portrayal which defuses the rendering interceptions. An NFC is employed to link two devices via Bluetooth or use an Android Beam trait which assures erect Bluetooth connection between two devices as soon as they are touched.

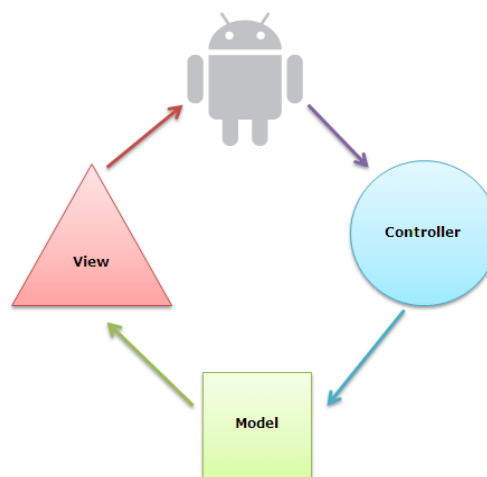


Fig. 2. GUI Architecture of Android

Media Support has been embodied with several small updates such as bellow grade media codec, USB audio, auto recording trigger, multichannel audio etc. Apps & users can be culled to play audio media exploiting the new Media Router [2]. App Encryption has been annexed to make it arduous to corsair an app.

5 HARDWARE SUPPORT

Not all Android users will be able to palate Jelly Bean as it is presently obtainable for selected hardware only. One might get to relish it in the near future where others might not get it at all ever, only unless new hardware is sought. As of now, Android 4.1 is headed to ameliorate mostly all premium gears which comprise of Asus Transformer series, HTC One series & Samsung Galaxy series [3]. Samsung Galaxy Nexus users have tasted Jelly Bean & quote it as "luscious".

6 CORE FEATURES

- An updated Camera app that enables you to pinch on the viewfinder to spring directly into your image gallery for hands-down photo viewing and apportion [4].
- Voice Typing has taken a huge leap with OFFLINE Voice Typing feature. Currently this is available in English (US) only whereas new languages will arrive soon.
- A modernized system clavier with reformed and amended dictionaries meliorated text-to-speech functionality, and sagacious word anticipation sum up as an icing to the Jelly Bean pie.
- Support for contact-free NFC photo sharing & Android Beam for "Touch & Transfer" competence with a new trait by which data can be sent by tapping one's device.
- "Smart app updates" that concedes to download the updated slices changed in the applications as an alternative to download the whole updated app.
- Face-Unlock safeguard trait that demands a blink before your phone's security be unzipped.
- Motion-based steering commands for visually disabled users & comprehended aid for Braille infix and output gears.

- Wise reflexive widgets that fit on the screen as per the vacant gaps available. One can get rid of them by pinching and hurling them away.
- Language Aid has been introduced to give the user a feel of one's zonal milieu. Languages like Telugu, Malayalam, Thai, Hebrew & Arabic to arrive soon.
- Card-based search results which includes Natural Language Processing. It grasps what is said & responds back. The voice support is astounding and attractive than SIRI.
- Google Now collects information from your location, past search results and your tasks and provides surprising outcomes [5].

For example, pacing down an avenue, it will display the map of the present location and purvey a primary report of all the cafes and edifices in the vicinity, even in the absence of internet service.

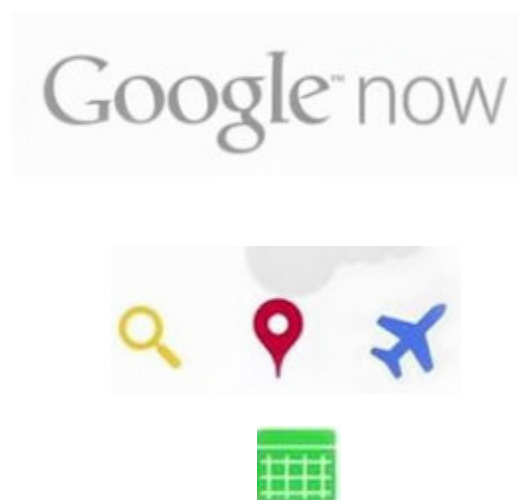


Fig. 4. Google Now Feature

7 ASLR BASED SECURITY

Google has taken care of all the feasibilities which direct a malware assault or other threats as set to the former operating systems in market. The new vindication has been sketched to shield the users from malware data that mounts automatically from websites and sets up grave menaces for the data. This trait is known as ASLR i.e. **Address Space Layout Randomization** [6].

For the first time, this new feature was used in Android 4.0-Ice Cream Sandwich Operating System but was ineffective and the coding didn't get any better reviews altogether. But, the flaws were detected and the coding was revised to launch this feature with a higher efficiency rate and effectiveness to provide the users with a secure environment with no threat to data whatsoever.

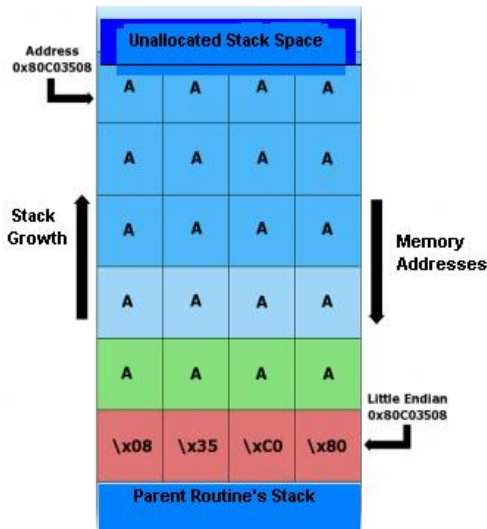


Fig. 5. Address Space Layout Representation

The ASLR feature uses an haphazard address technique to guard the attacks. This is attained by locating the various elements and data fabric haphazardly in the memory. In other words, this poses as a barricade for the hacker, who is stranded since the location of execution of the data fabric & his malware coding is unknown. This makes the malware programming even arduous, making Jelly Bean the most assured Android variant ever.

8 HEAD TO HEAD: APPLE IOS 6.0

- A STUDY

Apple released the new variant of its iOS series with 6.0 as a competitor to Android 4.1. Much amelioration has been done and changes brought to augment user's experience which is sure to bring up a cut-throat rivalry in the market.

Let's have a closer look at the stats [7]:

a. **Hardware:** Jelly Beans is specialized to be used on premium gears from different manufacturers whereas iOS 6.0 is only supported by Apple's i-pefixed products

such as iPad, iPod Touch & iPhone.

- b. **Kernel:** The kernel is the bosom of the operating system: Jelly Bean runs on Linux core whereas Apple iOS 6.0 has a nucleus stuffed with the raw power of X OS.
- c. **App Market:** Android Market is engrossed by 600,000 apps out of which mostly are meant to sell digital content from within one's app. Apple App Market is flooded with about 650,000 apps in which iPad & iPhone apps hold a good share of 75%.
- d. **Security:** One of the principle issues for any OS is its security traits to guard data against varied dangers. Android has no other option than to step back silently as Apple's X OS has the upper hand being less prone to malware threats than Linux based Android Jelly Bean.
- e. **Voice Recognition:** Android has acquainted voice recognition feature with Jelly Bean which works well in online as well as offline style. Apple's voice recognition and personal assistant SIRI was introduced in its predecessor 5.0, and has even better traits in iOS 6.0.



Fig. 6. Apple iOS 6.0 vs. Android Jelly Bean

- f. **3D Maps:** Google Maps are accesible on Jelly Bean in both online and offline mode whereas Apple features new mapping and location search powered by TomTom, but works only when online. Aid for turn by turn seafaring and traffic reports are supported by both rivals.
- g. **Cloud Storage:** Jelly Beans offers traits like Google Drive & Google Sync for cloud storage whereas Apple iOS 6.0 is equipped with iCloud feature with free 5GB data storage on the user's cloud account.

9 DEMERITS

Jelly Bean has been reportedly not supporting the Flash traits anymore. Moreover, it seems to be the end of Android & Flash together as Adobe confirmed that a level up to Android 4.1 will cause undesired results if one has a preloaded Flash Player as Jelly Bean is not certified to support Flash. To make things inferior, Adobe announced the unavailability of Flash Player in the Google Play Store, with effect from 15th August, 2012. Though, users with any former variant than Jelly Bean will receive updates from Adobe, without any inconvenience [8]. This announcement led to a sigh of relief for Apple since Jelly Bean mounts on the same boat as iPad & iPhone.

Though several ways to run Flash Player on Jelly Bean are becoming available on the web, but at a cost. The cost is that the user will have to do without Google Chrome browser and download & install the Flash APK version. This was cracked by a developer of the XDA community who loaded the APK version into Jelly Beans and somehow, it worked without causing any jitters.

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