

Android: Review of Android N

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Abstract- World is moving towards mobile computing from desktop pc and laptops. The mobile phones around us are the combination of hardware and the software. The hardware is the hard part of device and the software are the governor of the hardware. There are almost six billion users around the globe using Android.

Android is an open source and Linux-based operating system for mobile devices such as smartphones and tablet computers. Android users download more than 1.5 billion applications and games from Google Play each month. Due to Its Powerful development framework users as well software developers are able to create their own applications for wide range of devices. Its kernel is based on Linux. Linux kernel is used to manage core system services such as virtual memory, networking drivers, and power management

It seems that Android 6.0 Marshmallow is barely out of the gates and already the focus of everyone's attention has moved on to the next version of Android. That next version will be the seventh major release of the world's most popular mobile OS (Android N).

Keywords— Marshmallow, Android N, Linux, kernel, Android

I. INTRODUCTION

Android operating system is one of the most widely used operating system these days [1]. Android Operating System is mainly divided into four main layers: the kernel, libraries, application framework and applications. Its kernel is based on Linux. Linux kernel is used to manage core system services such as virtual memory, networking, drivers, and power management [11]. In these paper different features of architecture of Android OS as well security features of Android OS are discussed.

Android is an open source and Linux-based operating system for mobile devices such as smartphones and tablet computers [11]. Android

was developed by the Open Handset Alliance, led by Google, and other companies. Android Programming is based on Java programming language so if you have basic understanding on Java programming then it will be a fun to learn Android application development [6].



Features of Android: Android is a powerful operating system competing with Apple 4GS and supports great features. Few of them are listed below:

- **Beautiful UI:** Android OS basic screen provides a beautiful and intuitive user interface.
- **Connectivity:** GSM/EDGE, IDEN, CDMA, EV-DO, UMTS, Bluetooth, Wi-Fi, LTE, NFC and WiMAX.
- **Storage:** SQLite, a lightweight relational database, is used for data storage purposes.
- **Media support:** H.263, H.264, MPEG-4 SP, AMR, AMR-WB, AAC, HE-AAC, AAC 5.1, MP3, MIDI, Ogg Vorbis, WAV, JPEG, PNG, GIF, and BMP.
- **Web browser:** Based on the open-source Web Kit layout engine, coupled with Chrome's V8 JavaScript engine supporting HTML5 and CSS3.
- **Multi-touch:** Android has native support for multi-touch which was initially made available in handsets such as the HTC Hero.
- **Multi-tasking:** User can jump from one task to another and same time various application can run simultaneously.
- **Resizable widgets:** Widgets are resizable, so users can expand them to show more content or shrink them to save space.
- **Multi-Language:** Supports single direction and bi-directional text.

- *GCM*: Google Cloud Messaging (GCM) is a service that lets developers send short message data to their user on Android devices, without needing a proprietary sync solution.
 - *Wi-Fi Direct*: A technology that lets apps discover and pair directly, over a high-bandwidth peer-to-peer connection.
 - *Android Beam*: A popular NFC-based technology that lets users instantly share, just by touching two NFC enabled phones together.

II. ANDROID N

It seems that Android 6.0 Marshmallow is barely out of the gates and already the focus of everyone's attention has moved on to the next version of Android[2]. That next version will be the seventh major release of the world's most popular mobile OS and if Google's past penchant for the alphabet is anything to base assumptions off of (it is—especially since the company renamed itself Alphabet, with Google only not being one division of the larger company) it's very likely the next version of Android will be colloquially known as "Android N".

As mentioned above, we already know that the Android N release date will be May 18, during Google's annual developer conference, Google I/O 2016. The Android N developer preview will be shown off during Sundar Pichai's keynote lecture on day one of the conference and the factory images will be made available later in the day.

The Android N release date will be May 18, after the Google I/O 2016 keynote[3].

The final Android 7.0 release date will coincide with the launch of the next-generation Nexus releases at the end of October or early November. This Android 7 release will be limited to Nexus devices at first and make its way to all other manufacturer devices and carriers networks over the next six months or so.

III. ADDITIONAL FEATURES OF LATEST VERSION ANDROID "N"

- *Multi-window mode*: The first Android N feature to be confirmed was multi-window mode, with the confirmation coming, obscurely enough, via a Reedit AMA with the Pixel C team. During the discussion, Andrew Bowers confirmed that "split screen is in the works". Of course, you can already get a version of stock multi-window mode in Android Marshmallow, but it's far from polished.
- *Better tablet support*: During the same Reedit AMA, Pixel C team member Glen Murphy came right out and confessed: "we're working hard on a range of enhancements for this form factor." While he didn't go any further, these Android N tablet features could include: more functional multi-tasking (and I'm not just talking about multi-window here), a real push for tablet-optimized apps (rather than just blown-up phone apps), customizable nav buttons, DPI switcher, stock floating mini-apps and tablet-specific System UI Tuner features.
- *Moving to Open JDK from Java APIs*: Following a sticky situation with Oracle over "rewritten" Java APIs, Google will officially be making the switch to Open JDK in Android N. It's still Oracle code, but Open JDK is, as the name, suggests, part of the open-source Java Development Kit. As Google confirmed: "we plan to move Android's Java language libraries to an Open JDK-based approach, creating a common code base for developers to build apps and services." The change should make development for Android N that much simpler and external changes will be negligible.
- *Stylus support as standard*: Samsung may have given us a clue about forthcoming stylus support in Android N when it revealed certain S Pen features would be deprecated in the next version of the

platform via its developer page. The fact that it's dropping Air Button, Smart Clip, and Writing Buddy has sparked some speculation that Google might be folding some kind of stylus support into Android N. Of course, nothing is certain for now.

- *Chrome OS integration:* This one is a peculiar one. Last year The Wall Street Journal "confirmed" that Android and Chrome OS would be merged, only to have Google set the record straight soon after. While the initial report claimed that Chrome OS would be killed off, Google responded by saying it was fully committed to Chrome OS and the platform was "here to stay" but that it is looking at "ways to bring together the best of both operating systems." It's highly likely that we'll see at least some implementation of Chrome OS and Android compatibility in Android N.
- *New messaging app:* There's a rumour doing the rounds that Google will be introducing an all-new messaging app with Android N to replace the largely unpopular Hangouts SMS/MMs integration. The new app will be based on the Rich Communications Services (RCS) platform, which allows for much more than just talk and text to be shuttled around, including video chat, file sharing and instant messaging. Google has publicly admitted its commitment to the RSC standard, but there's no telling yet if it's anywhere near ready for inclusion in Android N.
- *Improved Smart Lock for Passwords:* Android Marshmallow introduced Smart Lock for Passwords, a basic Google password manager that can store your app passwords so that any time you re-install an app you will be automatically logged in. Combined with Android's revitalised app backup, the idea is that the whole process of

setting up a new device is seamless. The only problem is that not that many apps support Smart Lock for passwords yet so its value is still largely underutilized. With any luck, Android N will see a lot more apps supporting the feature.

- *Battery optimization:* Battery optimization is and always will be one of the most important aspects of any Android release. Lollipop introduced a stock Battery Saver Mode and Marshmallow introduced Doze Mode and App Standby. Android N will likely refine these features – and hopefully allow Doze to work even when it's in your pocket, much like and tweak Battery Saver in ways that make the default state of your phone a power-conservation mode.
- *Enhanced security and app stability:* With the appearance of granular app permissions in Marshmallow, Google took a major step in the right direction: allowing users to choose the app permissions they were comfortable with on an app-by-app basis and reject those they felt were unreasonable. Because it was such early days, some apps that weren't updated to allow such user-facing control tended to behave erratically. By the time Android N rolls out, Google should have committed devs to updating their apps to provide the same level of stability with or without certain non-critical permissions allowed.

IV. CONCLUSIONS

Android is an open source and Linux-based operating system for mobile devices such as smartphones and tablet computers. Android was developed by the Open Handset Alliance, led by Google, and other companies. Android programming is based on Java programming language so if you have basic understanding on Java programming then it will be a fun to learn Android application development.

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