

ANDROID 7 NOUGAT AND ANDROID VERSION HISTORY

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Abstract—Android "Nougat" (codenamed N in-development) is the upcoming major 7.0 release of the Android operating system. It was first released as a developer preview on March 9, 2016, with factory images for current Nexus devices, as well as with the new "Android Beta Program" which allows supported devices to be upgraded directly to the Android Nougat beta via over-the-air update

Keywords— Android; Nougat; Marshmallow; Vulkan

1. INTRODUCTION

The version history of the Android mobile operating system began with the release of the Android alpha in November 2007. The first commercial version, Android 1.0, was released in September 2008. Android is continually developed by Google and the Open Handset Alliance (OHA), and has seen a number of updates to its base operating system since the initial release.

Versions 1.0 and 1.1 were not released under specific code names, but since April 2009's Android 1.5 "Cupcake", Android versions have had confectionery-themed code names. Each is in alphabetical order, with the most recent being Android 6.0.1 "Marshmallow", released in December 2015. As of June 2016, the upcoming Android release is Android 7.0 "Nougat".

Code Name	Version Number	Initial Release date	API Level
N/A	1.0	Sept 23, 2008	1
	1.1	Feb 9, 2009	2
Cupcake	1.5	Apr 27, 2009	3
Donut	1.6	Sept 15, 2009	4
Éclair	2.0 – 2.1	Oct 26, 2009	5 – 7
Froyo	2.2 – 2.2.3	May 20, 2010	8
Gingerbread	2.3 – 2.3.7	Dec 6, 2010	9 – 10
Honeycomb	3.0 – 3.2.6	Feb 22, 2011	11 – 13
Ice Cream Sandwich	4.0 – 4.0.4	Oct 18, 2011	14 – 15

Jelly Bean	4.1 - 4.3.1	July 9, 2012	16 – 18
KitKat	4.4 – 4.4.4	Oct 31, 2013	19 – 20
Lollipop	5.0 – 5.1.1	Nov 12, 2014	21 – 22
Marshmallow	6.0 – 6.0.1	Oct 5, 2015	23
Nougat	7.0	Aug or Sept 2016	24

2. ANNOUNCEMENT

In March 2016, a Developer Preview of a new Android operating system codenamed N was made available, surprising a whole number of news sources. It included updated and incorporated features, and a very buggy system.

Google further discussed Android "N" during their I/O keynote on May 18, 2016, and unveiled its new virtual reality platform Daydream alongside Google Home, Google Assistant, Android Wear 2.0, Allo and Duo.

During the conference, a new "beta-quality" preview build of Android "N" was released, and Google held a contest to determine the official name of the operating system. On June 30, 2016, Google announced that N is now "Nougat" and that it will be the seventh major version of Android itself.

It is to be slated for an August or September release.

3. DEVELOPER PREVIEWS

There are a total of five Android N preview releases planned before the final release in the third quarter of 2016. An updated preview is to be released each month (4 to 6 week interval). The N Developer Preview started on March 9, 2016 with the release of Preview 1. On April 13, 2016, Android N Developer Preview 2 was announced. Android N Developer Preview 3 became available on May 18, 2016.

Android N Developer Preview 4 became available on June 15, 2016.

4. FEATURES

Android Nougat introduces a split-screen multi-window mode, in which two apps can be snapped to occupy halves of the screen. An experimental freeform multi-window mode is also available as a hidden feature, where multiple apps can appear simultaneously on the screen. The notification shade was also redesigned, featuring a smaller row of icons for settings, replacing notification cards with a "sheet" design, and allowing inline replies to notifications implemented via existing APIs used with Android Wear. Multiple notifications from a single app can also be "bundled".

Seamless updates are also introduced, following Chrome OS. Software updates will be able to install in the background and run with only a reboot. This is possible because of the introduction of two system partitions, one for use and the other for updates.

The "Doze" power saving mechanism introduced in Marshmallow was expanded to include a state activated when the device is running on battery and the screen has been off for a period of time, but is not stationary. In this state, network activity is restricted, and apps are granted "maintenance windows" in which they can access the network and perform background tasks. The full Doze state is activated if the device is stationary for a period of time. A new "Data Saver" mode restricts background mobile data usage, and can trigger internal functions in apps that are designed to reduce bandwidth usage, such as capping the quality of streaming media among other examples.

Developer Preview 2 added platform support for Vulkan, the new low-level 3D rendering API to augment OpenGL ES but with higher graphics performance. A new set of human emoji was also included in this version of the preview, with support for skin tones.

5. DEVELOPMENT PLATFORM

In December 2015, Google announced that Android N would switch its Java Runtime Environment from the defunct Apache Harmony to OpenJDK—the official open source implementation of the Java platform maintained by Oracle Corporation and the Java community. Google promoted that the shift was part of an effort to create a "common code base" between Java on Android and other platforms and allow use of popular Java 8 features in code, but was actually to address then-ongoing litigation with Oracle surrounding its use of copyrighted Java APIs as part of the Android platform, as OpenJDK is expressly licensed under the GNU General Public License (a U.S. federal court has since ruled that Google's use of the APIs was fair use).

The Android Runtime (ART) now incorporates a profile-guided compilation system, utilizing a JIT compiler and profiling alongside its current ahead-of-time compiler to further optimize apps for a device's hardware and other conditions in the background. This change also increases

the speed of the application "optimization" process that occurs on an app or system upgrade.

6. CONCLUSION

This paper, explains about the android version history and their API levels, and the explains about the upcoming version of android 7 nougat, the API level of android nougat is 7 and its features.

Android nougat which can overcome the drawbacks in android marshmallow and also it contains the extended features.

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