TLP: WHITE
MS-ISAC CYBERSECURITY ADVISORY

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SUBJECT:
Multiple Vulnerabilities in Google Android OS Could Allow for Arbitrary Code Execution

OVERVIEW:
Multiple vulnerabilities have been discovered in the Google Android operating system (OS), the most severe of which could allow for arbitrary code execution. Android is an operating system developed by Google for mobile devices, including, but not limited to, smartphones, tablets, and watches. Successful exploitation of the most severe of these vulnerabilities could allow for arbitrary code execution within the context of a privileged process. Depending on the privileges associated with the application, an attacker could then install programs; view, change, or delete data; or create new accounts with full user rights. If this application has been configured to have fewer user rights on the system, exploitation of the most severe of these vulnerabilities could have less impact than if it was configured with administrative rights.

THREAT INTELLIGENCE:
There are currently no reports of these vulnerabilities being exploited in the wild.

SYSTEMS AFFECTED:
- Android OS builds utilizing Security Patch Levels issued prior to April 5, 2018.

RISK:
Government:
- Large and medium government entities: **High**
- Small government entities: **High**

Businesses:
- Large and medium business entities: **High**
- Small business entities: **High**

Home users: High

TECHNICAL SUMMARY:
Multiple vulnerabilities have been discovered in Google Android OS, the most severe of which could allow for arbitrary code execution within the context of a privileged process. Details of these vulnerabilities are as follows:
- An elevation of privilege vulnerability in Android runtime. (CVE-2017-13274)
- An arbitrary code vulnerability in Broadcom components. (CVE-2017-13292)
- An information disclosure vulnerability in Framework. (CVE-2017-13275)
- An elevation of privilege vulnerability in Kernel components. (CVE-2017-13293)
- Multiple information disclosure vulnerabilities in Kernel components. (CVE-2017-1653, CVE-2017-5754)
- Multiple arbitrary code vulnerabilities in Media framework. (CVE-2017-13276, CVE-2017-13277)
- An elevation of privilege vulnerability in Media framework. (CVE-2017-13278)
- Multiple denial of service vulnerabilities in Media framework. (CVE-2017-13279, CVE-2017-13280)
- Multiple vulnerabilities in Qualcomm closed-source components 2014-2016 cumulative update. (CVE-2014-10039, CVE-2014-10043, CVE-2014-10044, CVE-2014-10045, CVE-2014-10046, CVE-2014-10047, CVE-2014-10048, CVE-2014-

10050, CVE-2014-10051, CVE-2014-10052, CVE-2014-10053, CVE-2014-10054, CVE-2014-10055, CVE-2014-10056, CVE-2014-10057, CVE-2014-10058, CVE-2014-10059, CVE-2014-10062, CVE-2014-10063, CVE-2014-9971, CVE-2014-9972, CVE-2014-9976, CVE-2014-9981, CVE-2014-9985, CVE-2014-9986, CVE-2014-9987, CVE-2014-9988, CVE-2014-9989, CVE-2014-9990, CVE-2014-9991, CVE-2014-9993, CVE-2014-9994, CVE-2014-9995, CVE-2014-9996, CVE-2014-9997, CVE-2014-9998, CVE-2015-0574, CVE-2015-0576, CVE-2015-8593, CVE-2015-8594, CVE-2015-9063, CVE-2015-9064, CVE-2015-9065, CVE-2015-9066, CVE-2015-9108, CVE-2015-9109, CVE-2015-9110, CVE-2015-9111, CVE-2015-9112, CVE-2015-9113, CVE-2015-9114, CVE-2015-9115, CVE-2015-9116, CVE-2015-9118, CVE-2015-9119, CVE-2015-9120, CVE-2015-9122, CVE-2015-9123, CVE-2015-9124, CVE-2015-9126, CVE-2015-9127, CVE-2015-9128, CVE-2015-9129, CVE-2015-9130, CVE-2015-9131, CVE-2015-9132, CVE-2015-9133, CVE-2015-9134, CVE-2015-9135, CVE-2015-9136, CVE-2015-9137, CVE-2015-9138, CVE-2015-9139, CVE-2015-9140, CVE-2015-9141, CVE-2015-9142, CVE-2015-9143, CVE-2015-9144, CVE-2015-9145, CVE-2015-9146, CVE-2015-9147, CVE-2015-9148, CVE-2015-9149, CVE-2015-9150, CVE-2015-9151, CVE-2015-9152, CVE-2015-9153, CVE-2015-9156, CVE-2015-9157, CVE-2015-9158, CVE-2015-9159, CVE-2015-9160, CVE-2015-9161, CVE-2015-9162, CVE-2015-9163, CVE-2015-9164, CVE-2015-9165, CVE-2015-9166, CVE-2015-9167, CVE-2015-9169, CVE-2015-9170, CVE-2015-9171, CVE-2015-9172, CVE-2015-9173, CVE-2015-9174, CVE-2015-9175, CVE-2015-9176, CVE-2015-9177, CVE-2015-9178, CVE-2015-9179, CVE-2015-9180, CVE-2015-9181, CVE-2015-9182, CVE-2015-9183, CVE-2015-9184, CVE-2015-9185, CVE-2015-9186, CVE-2015-9187, CVE-2015-9188, CVE-2015-9189, CVE-2015-9190, CVE-2015-9191, CVE-2015-9192, CVE-2015-9193, CVE-2015-9194, CVE-2015-9195, CVE-2015-9196, CVE-2015-9197, CVE-2015-9198, CVE-2015-9199, CVE-2015-9200, CVE-2015-9201, CVE-2015-9202, CVE-2015-9203, CVE-2015-9204, CVE-2015-9205, CVE-2015-9206, CVE-2015-9207, CVE-2015-9208, CVE-2015-9209, CVE-2015-9210, CVE-2015-9211, CVE-2015-9212, CVE-2015-9213, CVE-2015-9215, CVE-2015-9216, CVE-2015-9217, CVE-2015-9218, CVE-2015-9219, CVE-2015-9220, CVE-2015-9221, CVE-2015-9222, CVE-2015-9223, CVE-2015-9224, CVE-2016-10380, CVE-2016-10381, CVE-2016-10384, CVE-2016-10385, CVE-2016-10386, CVE-2016-10387, CVE-2016-10390, CVE-2016-10392, CVE-2016-10406, CVE-2016-10407, CVE-2016-10409, CVE-2016-10410, CVE-2016-10411, CVE-2016-10412, CVE-2016-10414, CVE-2016-10415, CVE-2016-10416, CVE-2016-10417, CVE-2016-10418, CVE-2016-10419, CVE-2016-10420, CVE-2016-10421, CVE-2016-10422, CVE-2016-10423, CVE-2016-10424, CVE-2016-10425, CVE-2016-10426, CVE-2016-10427, CVE-2016-10428, CVE-2016-10429, CVE-2016-10430, CVE-2016-10431, CVE-2016-10432, CVE-2016-10433, CVE-2016-10434, CVE-2016-10435, CVE-2016-10436, CVE-2016-10438, CVE-2016-10439, CVE-2016-10440, CVE-2016-10441, CVE-2016-10442, CVE-2016-10443, CVE-2016-10444, CVE-2016-10445, CVE-2016-10446, CVE-2016-10447, CVE-2016-10448, CVE-2016-10449, CVE-2016-10450, CVE-2016-10451, CVE-2016-10452, CVE-2016-10454, CVE-2016-10455, CVE-2016-10456, CVE-2016-10457, CVE-2016-10458, CVE-2016-10459, CVE-2016-10460, CVE-2016-10461, CVE-2016-10462, CVE-2016-10464, CVE-2016-10466, CVE-2016-10467, CVE-2016-10469, CVE-2016-10471, CVE-2016-10472, CVE-2016-10473, CVE-2016-10474, CVE-2016-10475, CVE-2016-10476, CVE-2016-10477, CVE-2016-10478, CVE-2016-10479, CVE-2016-10480, CVE-2016-10481, CVE-2016-10482, CVE-2016-10483, CVE-2016-10484, CVE-2016-10485, CVE-2016-10486, CVE-2016-10487, CVE-2016-10489, CVE-2016-10490, CVE-2016-10491, CVE-2016-10492, CVE-2016-10493, CVE-2016-10494, CVE-2016-10495, CVE-2016-10496, CVE-2016-10497, CVE-2016-10498, CVE-2016-10499, CVE-2016-10501, CVE-2016-5348)

- Multiple vulnerabilities in Qualcomm closed-source components. (CVE-2017-11011, CVE-2017-18071, CVE-2017-18072, CVE-2017-18073, CVE-2017-18074, CVE-2017-18125, CVE-2017-18126, CVE-2017-18127, CVE-2017-18128, CVE-2017-18129, CVE-2017-18130, CVE-2017-18132, CVE-2017-18133, CVE-2017-18134, CVE-2017-18135, CVE-2017-18136, CVE-2017-18137, CVE-2017-18138, CVE-2017-18139, CVE-2017-18140, CVE-2017-18142, CVE-2017-18143, CVE-2017-18144, CVE-2017-18145, CVE-2017-18146, CVE-2017-18147, CVE-2017-8274, CVE-2017-8275, CVE-2018-3589, CVE-2018-3590, CVE-2018-3591, CVE-2018-3592, CVE-2018-3593, CVE-2018-3594)
- An information disclosure vulnerability in Qualcomm components. (CVE-2017-13077)
- An arbitrary code vulnerability in Qualcomm components. (CVE-2017-15822)
- Multiple elevation of privilege vulnerabilities in Qualcomm components. (CVE-2017-17770, CVE-2018-3563, CVE-2018-3566)
- Multiple arbitrary code vulnerabilities in System. (CVE-2017-13267, CVE-2017-13281, CVE-2017-13282, CVE-2017-13283, CVE-2017-13285)
- Multiple elevation of privilege vulnerabilities in System. (CVE-2017-13284, CVE-2017-13286, CVE-2017-13287, CVE-2017-13288, CVE-2017-13289)
- An information disclosure vulnerability in System. (CVE-2017-13290)
- A denial of service vulnerability in System. (CVE-2017-13291)

Successful exploitation of the most severe of these vulnerabilities could allow for arbitrary code execution in the context of a privileged process. These vulnerabilities could be exploited through multiple methods such as email, web browsing, and MMS when processing media files. Depending on the privileges associated with the application, an attacker could then install programs; view, change, or delete data; or create new accounts with full user rights. If this application has been configured to have fewer user rights on the system, exploitation of the most severe of these vulnerabilities could have less impact than if it was configured with administrative rights.

Google notes that the vulnerabilities associated with Qualcomm closed-source components 2014-2016 cumulative update address issues patched in Qualcomm AMSS security bulletins or security alerts between 2014 and 2016. Many Android devices may have already addressed these issues in prior updates, but they are included in this Android security bulletin in order to associate them with a security patch level.

RECOMMENDATIONS:
We recommend the following actions be taken:
- Apply appropriate updates by Google Android or mobile carriers to vulnerable systems, immediately after appropriate testing, when they become available.
- Remind users to only download applications from trusted vendors in the Play Store.
- Remind users not to visit un-trusted websites or follow links provided by unknown or un-trusted sources.
- Inform and educate users regarding threats posed by hypertext links contained in emails or attachments, especially from un-trusted sources.

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