Security Issues and Solutions in 5G networks

5G systems are the next step in the evolution of mobile communication. As a fundamental enabler of the Networked Society, 5G networks need to provide capabilities not only for voice and data communication as we know it today, but also for new use cases and new industries, and for a multitude of devices and applications to connect society at large. Research and standardization have started in many technology areas of fundamental importance for 5G (such as cloud and the Internet of Things). These efforts have achieved various degrees of maturity, although the definition of 5G mobile networks has not yet reached standardization phase in the 3GPP. The evolution of LTE is a vital part of 5G. However, 5G will include the evolution of all parts of the network, such as core and management systems, as well as all protocol layers ranging from radio to applications. As a result, security is potentially affected everywhere. Current 4G cellular systems provide a high level of security and trustworthiness for users and operators. Second generation (GSM) systems were the first to have standardized, built-in security functions, which then evolved through 3G and now 4G networks. Although the security designs of previous and current systems have provided a platform of undisputed socioeconomic success, with the number of global mobile subscriptions exceeding 7 billion in 2014 [1], 5G introduces many new aspects that require the following important questions to be addressed:
> Are there fundamentally new security requirements, and if so, how should they be identified?
> Can 5G security be a carbon copy of 4G security?
> Are previous design approaches still valid?
It is easy to think of 5G networks as mainly a quantitative evolution similar to previous transitions, such as higher bitrate, lower latency and more devices. But this is not the case: 5G security will just as much be a qualitative leap forward to meet the demands of a Networked Society.

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