FTMRS SOLAR

Disrupt base station communications

Overview

Are false base station attacks a threat to 5G networks?

Abstract: The rapid advancement of 5G networks introduces new security challenges, particularly with the rise of false base station (FBS) attacks. This study investigates the vulnerabilities of 5G networks exploited by FBSs, which hijack communications by mimicking legitimate base stations and compromising user equipment (UE).

What is a faulty base station vs a fake base station?

We varied the base station implementation to simulate legitimate vs. faulty but legitimate vs. fake and malicious base stations, where a faulty base station notifies the user of the connectivity disruption and releases the session, while a fake base station continues to hold the session.

What is a fake base station attack?

An attacker exploits the cell selection/reselection process (selecting the highest signal power) and cryptographically insecure (without integrity and authentication protection) broadcast system information messages in radio control communication to launch a fake base station attack in LTE [4, 5] and even in 5G-NR [6, 7].

What happens if a base station is faulty?

The faulty base station establishes a radio connection with the user equipment and releases the connection afterward due to the worst channel conditions. Because our reference values come from the worst channel conditions, the optimal thresholds hence ensure fake base station detection with zero false positives under varying network conditions.

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