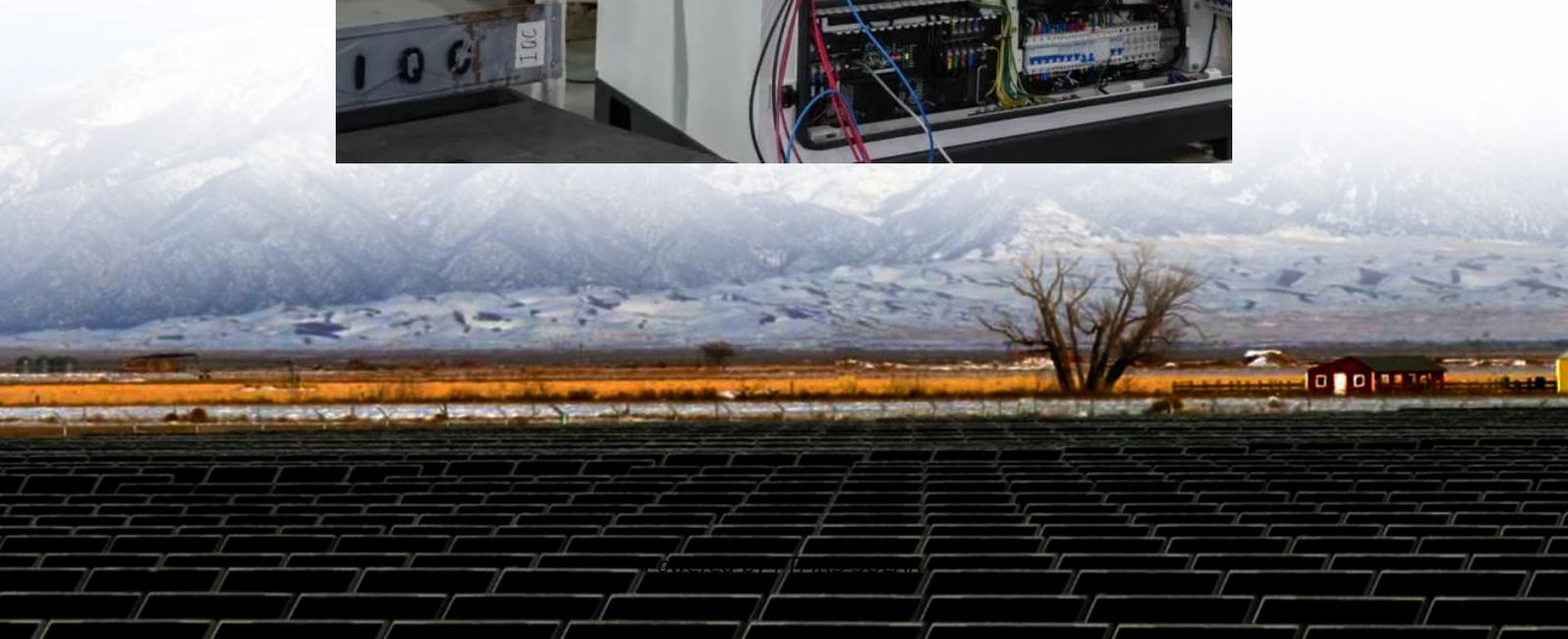


# **Devices with abnormal communication with base station**





## Overview

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Can fake base station attacks be detected?

For the first time, we systematically study fake base station attacks and their main influencing factors. We use a specification-conform simulation model that lets us analyze fake base station attacks on a large scale, and test detection mechanisms on the generated data.

Can user equipment evade a fake base station attack after detection?

We also implemented and validated link routing to show that the user equipment can evade a fake base station attack after detection. In the implementation, we showed that our scheme reduces the fake base station availability threat impact from an infinite time duration (without our scheme defense) to only 2.93 s (with our scheme defense).

What is a fake base station?

A malicious or fake base station is a well-known security issue in mobile networking. For example, there are open-source tools and tutorials for setting up fake base stations, e.g., Refs. [1, 2]. The fake base station exploits the radio signal-based base station selection process and the vulnerability in the broadcasting SIB and RRC messages.

What happens if user equipment connects to a fake base station?

Once the benign user equipment connects to the fake base station at the RRC layer, the adversary can launch a protocol downgrade from 5G/4G to 2G (i.e., bidding down) attack ; user equipment device identification attack ; SMS phishing attack [10, 11]; or an attack that drains the user equipment battery [9, 12].



## Devices with abnormal communication with base station

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### Fake Base Station Detection and Link Routing Defense

Sep 1, 2024 · Fake base stations comprise a critical security issue in mobile networking. A fake base station exploits vulnerabilities in the broadcast message announcing a base station's ...

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### AI-Based Anomaly Detection for Rogue Base Stations

Jul 7, 2025 · Rogue base stations, often set up by malicious actors, pose significant threats to network security and user privacy. These unauthorized stations mimic legitimate network ...

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### SMDFBs: Specification-Based Misbehavior Detection for False Base Stations

Nov 29, 2023 · The advancement of cellular communication technology has profoundly transformed human life. People can now watch high-definition videos anytime, anywhere, and ...

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### Research on Abnormal Energy Consumption Monitoring of Base Station

Oct 22, 2023 · With the large-scale construction of 5G, the operating cost of the communication industry is increasing year by year, and the energy consumption management of wireless base ...

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### Why We Cannot Win: On Fake Base Stations and Their ...

Jul 24, 2023 · Abstract Fake base stations (FBS) -- also known as IMSI catchers and Stingrays -- can identify and track mobile phones and further intercept their communication. They ...

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### SMDFBs: Specification-Based Misbehavior ...

Nov 29, 2023 · The advancement of cellular communication technology has profoundly transformed human life. People can now watch high-definition ...

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### The attacks aren't alright: Large-Scale Simulation of Fake Base Station

Aug 13, 2024 · For the first time, we systematically study fake base station attacks and their main influencing factors. We use a specification-conform simulation model that lets us analyze fake ...

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### Real-Time Rogue Base Stations Detection System in Cellular ...

Apr 10, 2024 · Recently, rogue base station (RBS) attack is growing common. A RBS attack occurs when an attacker uses a fake base station (FBS) to mimic a legitimate base station, ...

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### Fake Base Station Detection and Blacklisting

Jul 31, 2024 · A fake base station is a well-known security issue in mobile networking. The fake base station exploits the vulnerability in the broadcasting message announcing the base ...

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### Fake Base Station Threats in 5G Non-Public Networks



Mar 2, 2023 · Abstract With 5G technology, traditional industrial and business equipment can now be connected wirelessly in a non-public network separated from public mobile services. ...

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#### Fake Base Station Detection and Link Routing Defense

Sep 1, 2024 · Fake base stations comprise a critical security issue in mobile networking. A fake base station exploits vulnerabilities in the broadcast message announcing a base station's ...

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#### A Joint Detection Method for Identifying Pseudo Base Station ...

The attack of pseudo base station is one of the security problems on mobile terminals, which affects normal communications and disguises as legit users for illegal purposes. To prevent ...

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