

Solar Storage Container Solutions

Base station communication equipment security issues



Overview

The malicious base station threats include breaching the user privacy against its location and credentials, redirection of the networking (e.g., fake destination and web server), protocol downgrading and manipulation (e.g., de-registration and authentication-and-key-agreement or AKA bypass), dispatching false alert messages, and complete control of the availability and wireless link for DoS, among others. 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 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 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].

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].

How can a fake base station be detected and blacklisted?

For detection and blacklisting, our scheme uses the real-time information of both the time duration and the number of request transmissions, the features of which are directly impacted by the fake base station's threat and which have not been studied in previous research.

How does blacklisting identify a faulty base station?

Our blacklisting identification focuses on the attacker (fake base station) and not on accidental/unintentional failures (faulty base station). We therefore distinguish between fake and faulty but unintentional, the latter of which can be caused by the lack of connectivity services at the time of the user equipment access.

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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

Vodacom Mpumalanga beefs up security for base stations

Sep 7, 2023 · In response to these issues, Vodacom Mpumalanga has taken several measures to reinforce security and prevent theft and vandalism at base station sites. This includes installing ...



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Precheck Sequence Based False Base Station Detection ...

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Precheck Sequence Based False Base Station Detection ...

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Radio Base Stations for Secure Communication

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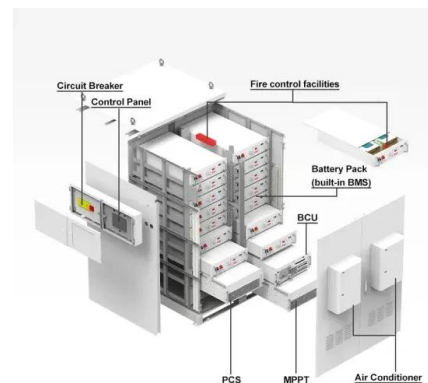


The Applicability of Macro and Micro Base Stations for 5G Base Station

Oct 14, 2022 · The construction of the 5G network in the communication system can potentially change future life and is one of the most cutting-edge engineering fields today. The 5G base ...

Wireless Interference Detected"

Feb 21, 2023 · The "Wireless Interference Detected" message occurs when the Base Station senses another wireless signal that could potentially drown out our sensors' communication to ...



Gotta Detect 'Em All: Fake Base Station and Multi-Step ...

Aug 19, 2025 · Fake base stations (FBSes) pose a significant security threat by impersonating legitimate base stations (BSes). Though efforts have been made to defeat this threat, up to ...

Base Stations and Cell Towers: The Pillars of ...

May 16, 2024 · Base stations and cell towers are critical components of cellular communication systems, serving as the infrastructure that supports seamless ...



Communication Base Station Security Features , Huijue ...

With over 7 million communication base stations globally powering our connected world, a critical question emerges: How secure are these critical nodes in our digital infrastructure? Recent ...

Mobile Communication Network Base Station Deployment ...

Apr 13, 2025 · This paper discusses the site optimization technology of mobile communication network, especially in the aspects of enhancing coverage and optimizing base station layout. ...

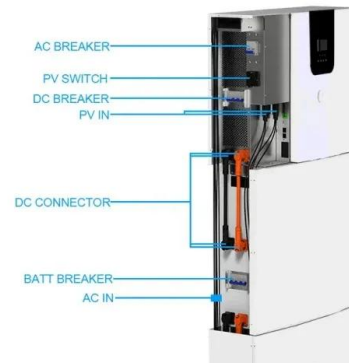


CELL PHONE TOWER BASE STATION SAFETY AND ...

Jun 28, 2025 · The major problems faced in management of base station includes the stolen of costly equipment, temperatures variations, fuel level being unnoticed by the cell site security, ...

Wireless Communications Security

Mar 25, 2018 · 3.1 Introduction Security is a critical issue in mobile radio applications both for the users and providers of such systems. Although the same may be said of all communications ...



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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Feb 16, 2024 · Cellular base stations and other unmanned locations are vulnerable critical infrastructure components that require constant physical security monitoring. It is imperative ...



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Feb 1, 2022 · The high-energy consumption and high construction density of 5G base stations have greatly increased the demand for backup energy storage batteries. To maximize overall ...

Protecting networks with cyber defense solutions

Jan 14, 2025 · 5G is the most secure wireless technology compared to previous network generations, making false base station attacks difficult. However, advanced false base station ...



Fake Base Station Detection and Blacklisting

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FBSDetector: Fake Base Station and Multi Step Attack

...

Jan 11, 2024 · Abstract. Fake base stations (FBSes) pose a significant security threat by impersonating legitimate base stations. Though efforts have been made to defeat this threat, ...



This paper has been accepted to appear at USENIX ...

Jan 31, 2025 · Abstract Fake base stations (FBSes) pose a significant security threat by impersonating legitimate base stations (BSes). Though efforts have been made to defeat this ...

Base Station Certificate and Multi-Factor Authentication ...

Apr 4, 2025 · We design and build a base station certificate (certifying the base station's public key and location) and a multi-factor authentication (making use of the certificate and the ...



Base Station System Structure

Jan 28, 2011 · 2 Base Station Background The intent of this section is to explore the role of base stations in communications systems, and to develop a reference model that can be used to ...



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