Lte base station communication equipment identification experiment

Overview

Abstract—This paper investigates the extraction of radio fre-quency fingerprints (RFF) of long-term evolution (LTE) base station synchronous signals, aiming to achieve the identification of legitimate base stations before the access process of the user equipment (UE). 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. A fake base station exploits vulnerabilities in the broadcast message announcing a base station's presence, which is called SIB1 in 4G LTE and 5G NR, to get user equipment to connect to the fake base station. Utilizing the UERANSIM open 5G RAN (Radio-Access Network) test platform, we assess the feasibility and practicality of applying these.

Article Content

lte equipment

LTE (Long-Term Evolution) is a standard for wireless broadband communication for mobile devices and data terminals, succeeding 3G UMTS and HSPA technologies. LTE equipment

MTS4L TETRA/LTE Base Station Specification Sheet

TETRA AND LTE WORKING TOGETHER The MTS4L TETRA/LTE Base Station Providing support for E1 and IP-over-Ethernet, the MTS4 provides a flexible path for the addition of enables operators to

LTE Base Station Equipments Usable with W-CDMA System

Base station equipment for the LTE system (evolved Node B (eNodeB)) is equipped with the radio access and con-trol technology, which is under provision by Base Transceiver Stations (BTS) and IP

lte network architecture and interfaces

Let''s delve into the technical details of the LTE network architecture and interfaces. LTE Network Architecture: User Equipment (UE): UE represents the mobile device used by the end-user,

An Experimental study on LTE and LTE -Advanced technologies

An Experimental study on LTE and LTE-Advanced technologies of wireless communication Abhishek Gaur1, Dr. Sibaram Khara2, Galgotias University, Greater Noida, Uttar Pradesh

LTE Physical Layer: eNodeB and UE

Explore the LTE physical layer, focusing on the transmitter modules in both the eNodeB (base station) and UE (user equipment) as per the LTE standard.

A Study on the Implementation of a Network Function for Real

The experiment detects false base station attacks using machine learning and specification-based techniques. For machine learning, six supervised learning algorithms (SVM, KNN, Decision Tree,

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

In this paper, we develop FBSDetector–an effective and efficient detection solution that can reliably detect FB-Ses and MSAs from layer-3 network traces using machine learning (ML) at the user

IEC 62320-1:2015

IEC 62320-1:2015 Maritime navigation and radiocommunication equipment and systems - Automatic identification system (AIS) - Part 1: AIS Base Stations - Minimum operational and performance

LTE Base Station Synchronous Signal Based RF Fingerprints ...

Abstract—This paper investigates the extraction of radio fre-quency fingerprints (RFF) of long-term evolution (LTE) base station synchronous signals, aiming to achieve the identification of legitimate

LTE_SDR_Final_Submission_Corrected.dvi

using LTE signals [26–28]; however, only experimental re-sults using LTE signals emulated in the laboratory were presented. There are several challenges associated with navigating with these

lte system architecture

Long-Term Evolution (LTE) is a standard for wireless broadband communication that defines the technology for 4G (fourth generation) networks. The LTE system architecture is designed

Base station

Base station (or base radio station, BS) is – according to the International Telecommunication Union ''s (ITU) Radio Regulations (RR) – a " land station

Fake Base Station Detection and Link Routing Defense

We empirically analyzed the detection and identification thresholds, which vary with the fake base station''s power and the channel condition.

Identification of GSM and LTE Signals Using Their Second-order ...

When the radio access technology (RAT) identification is considered, second order cyclostationarity is employed for classification of LTE and GSM signals .

Lte base station communication equipment identification experiment

This paper investigates the extraction of radio frequency fingerprints (RFF) of long-term evolution (LTE) base station synchronous signals, aiming to achieve the identification of ...

□□□□□□□□□□□□□□□□□□□□□□□□□: Fake Base Station and Multi Step Attack Detection in ...

In this paper, we develop □□□□□□□□□□□□□□□□□□□□□□□□□ –an effective and efficient detection solution that can reliably detect FBSes and MSAs from layer-3 network traces using machine learning (ML) at the user equipment (UE) side.

Identification of LTE base station communication system equipment

This document covers LTE base station manufacturers, which are very useful for operators going to provide LTE service. We will cover equipment manufacturers such as NSN, Alcatel Lucent, ...

LTE-based passive radars and applications: a review

LTE like GSM allows user equipment (UE) or receiver to synchronize with base station along with the processing of the received signal. In addition to these synchronization signals, features of LTE signal

Ambient FSK Backscatter Communications using LTE Cell Specific

Abstract—Long Term Evolution (LTE) signal is ubiquitously present in electromagnetic (EM) background environment, which make it an attractive signal source for the ambient backscatter communications

Detecting fake BTS

The unencrypted broadcast messages transmitted from the real base station can be read easily and the fake BTS uses some of these parameters to imitate a BTS and/or to intrude upon message flow

lte testing

LTE (Long-Term Evolution) testing is a comprehensive process that involves verifying the functionality, performance, and reliability of LTE networks and devices. LTE is a standard for wireless

Identification of LTE base station communication system equipment

Here"s a detailed technical explanation of LTE equipment: The eNodeB is the base station in the LTE network architecture responsible for the radio transmission and reception to ... A base transceiver

lte testing

Protocol Testing: UE (User Equipment) Protocol Testing: This involves testing the LTE device''s adherence to the LTE protocol stack. It includes procedures for connection establishment,

Field Experiment of Localization Based on Machine Learning in LTE ...

In mobile communications networks, if we can estimate the location of each user equipment (UE) with high accuracy, efficient cell planning and network optimization become possible.

(PDF) Accurate Base Station Placement in 4G LTE

Accurate Base Station Placement in 4G LTE Networks Using Multiobjective Genetic Algorithm Optimization February 2023 Wireless

Base station subsystem

The base station subsystem (BSS) is the section of a traditional cellular telephone network which is responsible for handling traffic and signaling between a mobile phone and the network switching

The vulnerability and enhancement of AKA protocol for mobile ...

The Long-Term Evolution (LTE)/5G network connects much of the world''s population to provide subscriber''s voice calls and mobile data delivery, with se

Space Station Research Explorer on NASA.gov

At any given time on board the space station, a large array of different experiments are underway within a wide range of disciplines. Here, you can search the database of experiments to learn more about

User equipment

User equipment UMTS Radio Access Network In the Universal Mobile Telecommunications System (UMTS) and 3GPP Long Term Evolution (LTE), user equipment (UE) is any device used directly by

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