IEEE.org | IEEE Xplore Digital Library | IEEE-SA | IEEE Spectrum | More Sites

Cart (0) | Create Account | Personal Sign In

Institutional Sign In

BROWSE MY SETTINGS **GET HELP**

WHAT CAN I ACCESS?

SUBSCRIBE

Advertisement

Browse Conferences > Frontier of Computer Science ...

< Previous | Back to Results | Next >

Impact of Directional Antenna on Physical Layer **Authentication**

Sign In or Purchase

77

Related Articles

Empowering full-duplex wireless communication by exploiting directional diversit...

Energy efficient communications in ad hoc networks using directional antennas

Routing improvement using directional antennas in mobile ad hoc networks

View All

6 Author(s)

Zhicheng Zeng; Ming Zhu; Lei Wang; Zhenquan Qin; Zhaoshu Tang; Honglian Ma

View All Authors

Abstract

Authors

Figures

References

Citations

Keywords

Metrics

Media

Abstract:

Many existed physical layer based schemes have been proposed to enhance the traditional authentication in wireless networks. However earlier schemes did not discuss directional antenna issue, and lacked of real measurement based evaluation. In this paper, we take an insight into the threat of directional antenna on physical layer authentication by real measurement observation. We give a brief overview of the mainstream physical layer authentication schemes, and build a real-time experimental platform to collect the channel state information, and evaluate the performance of some mainstream schemes by collecting real data in different typical environments, especially in the situation when the attacker uses directional antenna. We show the physical layer authentication schemes are effective in most cases, but may fail to detect the third party attacker equipped with directional antenna. Based on our discovery, we suggest that directional antenna impact should be seriously considered in physical layer based applications, especially in security domain.

Published in: Frontier of Computer Science and Technology (FCST), 2015 Ninth International Conference on

Date of Conference: 26-28 Aug. 2015

Date Added to IEEE Xplore: 02 November 2015

ISBN Information:

INSPEC Accession Number: 15573122

DOI: 10.1109/FCST.2015.37

Publisher: IEEE

Conference Location: Dalian, China

	Advertisement	i.
Download PDF	Read the full document	
Download Citations		Abstract
/iew References	Keywords IEEE Keywords	Authors
Email	Computer science, Directional antennas, Area measurement	Figures
Print	INSPEC: Controlled Indexing	References

talecommunication cocurity envitographic protocols directive antennas radio naturalle

telecommunication security, cryptographic protocols, unrective antennas, radio networks

Request Permissions

Export to Collabrated

Alerts

INSPEC: Non-Controlled Indexing

third party attacker, directional antenna, physical layer authentication, wireless networks, channel state information

Author Keywords

directional antenna, wireless authentication, channel state information

Authors

Zhicheng Zeng

Sch. of Software, Dalian Univ. of Technol., Dalian, China

Ming Zhu

Sch. of Software, Dalian Univ. of Technol., Dalian, China

Lei Wang

Sch. of Software, Dalian Univ. of Technol., Dalian, China

Zhenquan Qin

Sch. of Software, Dalian Univ. of Technol., Dalian, China

Zhaoshu Tang

Sch. of Software, Dalian Univ. of Technol., Dalian, China

Honglian Ma

Sch. of Software, Dalian Univ. of Technol., Dalian, China

Related Articles

Empowering full-duplex wireless communication by exploiting directional diversity Evan Everett; Melissa Duarte; Chris Dick; Ashutosh Sabharwal

Energy efficient communications in ad hoc networks using directional antennas A. Spyropoulos; C.S. Raghavendra

Routing improvement using directional antennas in mobile ad hoc networks A.K. Saha; D.B. Johnson

Handling asymmetry in gain in directional antenna equipped ad hoc networks G. Jakllari; I. Broustis; T. Korakis; S.V. Krishnamurthy; L. Tassiulas

Connected coverage in wireless networks with directional antennas Zuoming Yu; Jin Teng; Xiaole Bai; Dong Xuan; Weijia Jia

Distributed Strategies for Channel Allocation and Scheduling in Software-Defined Radio Networks

B. Han; V. S. A. Kumar; M. V. Marathe; S. Parthasarathy; A. Srinivasan

An integrated neighbor discovery and MAC protocol for ad hoc networks using directional antennas

G. Jakllari; Wenjie Luo; S.V. Krishnamurthy

SAND: Sectored-Antenna Neighbor Discovery Protocol for Wireless Networks Emad Felemban; Robert Murawski; Eylem Ekici; Sangjoon Park; Kangwoo Lee; Juderk Park; Zeeshan Hameed

DeWorm: A Simple Protocol to Detect Wormhole Attacks in Wireless Ad Hoc Networks Thaier Hayajneh; Prashant Krishnamurthy; David Tipper

An Overview of MAC Protocols with Directional Antennas in Wireless ad hoc Networks

Keywords

Citations

Back to Top

Hongning Dai; Kam-Wing Ng; Min-You Wu

IEEE Account

- » Change Username/Password
- » Update Address

Purchase Details

- » Payment Options» Order History
- » View Purchased Documents

Profile Information

- » Communications Preferences
- » Profession and Education
- » Technical Interests

Need Help?

- » US & Canada: +1 800 678 4333
- » Worldwide: +1 732 981 0060
- » Contact & Support

About IEEE Xplore | Contact Us | Help | Terms of Use | Nondiscrimination Policy | Sitemap | Privacy & Opting Out of Cookies

A not-for-profit organization, IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity. © Copyright 2017 IEEE - All rights reserved. Use of this web site signifies your agreement to the terms and conditions.