



# Embedded Systems Security: Practical Methods for Safe and Secure Software and Systems Development

By David Kleidermacher, Mike Kleidermacher

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The ultimate resource for making embedded systems reliable, safe, and secure

Embedded Systems Security provides:

- A broad understanding of security principles, concerns, and technologies
- Proven techniques for the efficient development of safe and secure embedded software
- A study of the system architectures, operating systems and hypervisors, networking, storage, and cryptographic issues that must be considered when designing secure embedded systems
- Nuggets of practical advice and numerous case studies throughout

Written by leading authorities in the field with 65 years of embedded security experience: one of the original developers of the world's only Common Criteria EAL 6+ security certified software product and a lead designer of NSA certified cryptographic systems.

This book is indispensable for embedded systems and security professionals, new and experienced.

An important contribution to the understanding of the security of embedded systems. The Kleidermachers are experts in their field. As the Internet of things becomes reality, this book helps business and technology management as well as engineers understand the importance of "security from scratch." This book, with its examples and key points, can help bring more secure, robust systems to the market.

- Dr. Joerg Borchert, Vice President, Chip Card & Security, Infineon Technologies North America Corp.; President and Chairman, Trusted Computing Group

Embedded Systems Security provides real-world examples of risk and exploitation; most importantly the book offers clear insight into methods used to counter vulnerabilities to build true, native security into technology.

- Adriel Desautels, President and CTO, Netragard, LLC.

Security of embedded systems is more important than ever. The growth in networking is just one reason. However, many embedded systems developers have insufficient knowledge of how to achieve security in their systems. David Kleidermacher, a world-renowned expert in this field, shares in this book his knowledge and long experience with other engineers. A very important book at the right time.

- Prof. Dr.-Ing. Matthias Sturm, Leipzig University of Applied Sciences; Chairman, Embedded World Conference steering board
- Gain an understanding of the operating systems, microprocessors, and network security critical issues that must be considered when designing secure embedded systems
- Contains nuggets of practical and simple advice on critical issues highlighted throughout the text
- Short and to –the- point real case studies included to demonstrate embedded systems security in practice

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### Editorial Review

#### Review

"The illustrations are a very strong part of this book. They are well conceived, always to the point, and in color. One interesting editorial feature is the so-called 'Key Points,' boxes that interrupt the text with a framed statement emphasizing a single important aspect. In addition, the book has very good bibliographical notes, which are extremely rare in this type of publication. Each chapter is followed by an extensive list of relevant citations, often with accompanying explanations...Overall, the book is very enlightening and engineers can learn a lot from it."--**Computing Reviews.com**, December 28, 2012 *"Embedded Systems Security provides real-world examples of risk and exploitation; most importantly the book offers clear insight into methods used to counter vulnerabilities to build true, native security into technology."*--**Adriel Desautels, President and CTO, Netragard, LLC** "Written by leading authorities on security in embedded systems (a lead designer of an NSA certified cryptographic system and a lead developer on the single highest rated software product in the Common Criteria security certification rating system), this book provides an overview of security principles, vulnerability concerns and applicable technologies. Real world examples of system weakness and exploitation illustrate the need for security in development and give practical advice for effective techniques to counteract threats. Areas addressed include data protection protocols, emerging embedded systems, networking, cryptography, system architecture, hypervisors, operating systems and storage."--**Reference and Research Book News, August 2012, page 186**

#### From the Back Cover

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#### About the Author

David Kleidermacher is Chief Technology Officer at Green Hills Software where he is responsible for technology strategy, platform planning, and solutions design. Kleidermacher is a leading authority in systems software and security, including secure operating systems and virtualization technology. Kleidermacher is one of the original authors of INTEGRITY, the first and only operating system technology certified to EAL 6+ High Robustness, the highest Common Criteria security level ever achieved for a software product. Kleidermacher earned his bachelor of science in computer science from Cornell University and has been the world's most prolific writer and speaker on embedded systems security over the past decade. He has been with Green Hills Software since 1991.

Mike Kleidermacher is a retired electrical engineer whose 45 year career was dedicated to the design, implementation, and strategic evolution of secure embedded communications devices. Mike held various positions, including program manager, technical director, and chief engineer, within GE Aerospace, Lockheed Martin, and L-3 Communications and specialized in hardware and systems engineering for Type-1 NSA certified communications systems. With his countless contributions to innovative products such as the Army's Mobile Subscriber Equipment, Ricebird crypto chip, Talon network encryptor, and Guardian secure smartphone, Mike is a legend in the United States INFOSEC/COMSEC communities. Mike holds a Top Secret / SCI U.S. government clearance and numerous patents related to the design and implementation of embedded security hardware. Mike received his master of science in electrical engineering from the University of Pennsylvania.

Mike Kleidermacher is a retired electrical engineer whose 45 year career was dedicated to the design, implementation, and strategic evolution of secure embedded communications devices. Mike held various positions, including program manager, technical director, and chief engineer, within GE Aerospace, Lockheed Martin, and L-3 Communications and specialized in hardware and systems engineering for Type-1 NSA certified communications systems. With his countless contributions to innovative products such as the Army's Mobile Subscriber Equipment, Ricebird crypto chip, Talon network encryptor, and Guardian secure smartphone, Mike is a legend in the United States INFOSEC/COMSEC communities. Mike holds a Top Secret / SCI U.S. government clearance and numerous patents related to the design and implementation of embedded security hardware. Mike received his master of science in electrical engineering from the University of Pennsylvania.

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