Mobile Malware Attacks and Defense

The Only Book for Analyzing and Mitigating Mobile Malicious Code!

- Understand the History and Threat Landscape of Rapidly Emerging Mobile Attacks
- Analyze Mobile Device/Platform Vulnerabilities and Exploits
- Mitigate Current and Future Mobile Malware Threats

Ken Dunham, Technical Editor

Saeed Abu-Nimeh
Michael Becher
Seth Fogie
ian Hernacki
se Andre Morales
aig Wright

Mobile Malware Attacks and Defense

Ken Dunham Technical Editor

Saeed Abu-Nimeh Michael Becher Seth Fogie Brian Hernacki Jose Andre Morales Craig Wright





Elsevier, Inc., the author(s), and any person or firm involved in the writing, editing, or production (collectively "Makers") of this book ("the Work") do not guarantee or warrant the results to be obtained from the Work.

There is no guarantee of any kind, expressed or implied, regarding the Work or its contents. The Work is sold AS IS and WITHOUT WARRANTY. You may have other legal rights, which vary from state to state.

In no event will Makers be liable to you for damages, including any loss of profits, lost savings, or other incidental or consequential damages arising out from the Work or its contents. Because some states do not allow the exclusion or limitation of liability for consequential or incidental damages, the above limitation may not apply to you.

You should always use reasonable care, including backup and other appropriate precautions, when working with computers, networks, data, and files.

Syngress Media[®], Syngress[®], "Career Advancement Through Skill Enhancement[®]," "Ask the Author UPDATE[®]," and "Hack Proofing[®]," are registered trademarks of Elsevier, Inc. "Syngress: The Definition of a Serious Security Library" "Mission CriticalTM," and "The Only Way to Stop a Hacker is to Think Like OneTM" are trademarks of Elsevier, Inc. Brands and product names mentioned in this book are trademarks or service marks of their respective companies.

Unique Passcode

28475016

PUBLISHED BY Syngress Publishing, Inc. Elsevier, Inc. 30 Corporate Drive Burlington, MA 01803

Mobile Malware Attacks and Defense

Copyright © 2009 by Elsevier, Inc. All rights reserved. Printed in the United States of America. Except as permitted under the Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the publisher, with the exception that the program listings may be entered, stored, and executed in a computer system, but they may not be reproduced for publication.

Printed in the United States of America 1 2 3 4 5 6 7 8 9 0

ISBN 13: 978-1-59749-298-0

Publisher: Laura Colantoni Acquisitions Editor: Brian Sawyer Technical Editor: Ken Dunham Developmental Editor: Gary Byrne

Cover Designer: Michael Kavish

Page Layout and Art: SPI Copy Editor: Mike McGee

Indexer: SPI

Project Manager: Andre Cuello

For information on rights, translations, and bulk sales, contact Matt Pedersen, Commercial Sales Director and Rights, at Syngress Publishing; email m.pedersen@elsevier.com.

Library of Congress Cataloging-in-Publication Data

Dunham, Ken.

Mobile malware attacks and defense / Ken Dunham

p. cm

ISBN 978-1-59749-298-0

- 1. Cellular telephone systems--Security measures. 2. Mobile communication systems--Security measures.
- 3. Mobile computing--Security measures. 4. Computer crimes--Prevention. 5. Computer crimes--Case studies.
- 6. Computer hackers. 7. Wireless Internet--Security measures. I. Title. TK5102.85.D86 2008

005.8--dc22

Visit us at

www.syngress.com

Syngress is committed to publishing high-quality books for IT Professionals and delivering those books in media and formats that fit the demands of our customers. We are also committed to extending the utility of the book you purchase via additional materials available from our Web site.

SOLUTIONS WEB SITE

To register your book, please visit **www.syngress.com**. Once registered, you can access your e-book with print, copy, and comment features enabled.

ULTIMATE CDs

Our Ultimate CD product line offers our readers budget-conscious compilations of some of our best-selling backlist titles in Adobe PDF form. These CDs are the perfect way to extend your reference library on key topics pertaining to your area of expertise, including Cisco Engineering, Microsoft Windows System Administration, CyberCrime Investigation, Open Source Security, and Firewall Configuration, to name a few.

DOWNLOADABLE E-BOOKS

For readers who can't wait for hard copy, we offer most of our titles in downloadable e-book format. These are available at **www.syngress.com**.

SITE LICENSING

Syngress has a well-established program for site licensing our e-books onto servers in corporations, educational institutions, and large organizations. Please contact our corporate sales department at corporatesales@elsevier.com for more information.

CUSTOM PUBLISHING

Many organizations welcome the ability to combine parts of multiple Syngress books, as well as their own content, into a single volume for their own internal use. Please contact our corporate sales department at corporatesales@elsevier.com for more information.

Technical Editor

Ken Dunham (CISSP, GSEC, GREM, GCFA, GCIH Gold Honors) has more than a decade of experience on the frontlines of information security. As director of global response for iSIGHT Partners, he oversees all global cyber-threat response operations. He frequently briefs upper levels of federal and private-sector cyber security authorities on emerging threats, and he regularly interfaces with vulnerability and geopolitical experts to assemble comprehensive malicious code intelligence and to inform the media of significant cyber threats. A major media company identified Mr. Dunham as the top quoted global malicious code expert in 2006.

Mr. Dunham regularly discovers new malicious code, has written antivirus software for Macintosh, and has written about malicious code for About.com, SecurityPortal, AtomicTangerine, Ubizen, iDEFENSE, and VeriSign. He is one of the pioneers of Internet community antivirus support with Web sites rated as the best global resource by *Yahoo Internet Life*, *PC Week*, AOL, and many others. Mr. Dunham is a member of the High Technology Crime Investigation Association (HTCIA), Government Emergency Telecommunications and Wireless Priority Service, AVIEN, Virus Bulletin, InfraGard, an RCG Information Security Think Tank, CME, and many other private information-sharing channels. Mr. Dunham also participated in the CIA Silent Horizon (blue team) and DHS CyberStorm (observer) exercises.

Mr. Dunham is a certified reverse engineer and regularly analyzes emergent exploits and malicious code threats and actors targeting client networks. He also works as a Wildlist Reporter each month with the Wildlist organization. He is the author of several books and is a regular columnist for an information security magazine. Mr. Dunham is also the founder of the Boise Idaho Information Systems Security Association (ISSA) and Idaho InfraGard chapters.

Ken wrote Chapters 1, 2, 3 and 6 (the introduction, visual payloads, timeline threats, and vishing).

Contributing Authors

Saeed Abu-Nimeh is a Ph.D. candidate at Southern Methodist University. His research focuses on network and e-mail security. He is interested in studying phishing and pharming attacks and spends his time developing solutions to thwart electronic identity theft and protect mobile users against various types of attacks. He is a member of IEEE, the Anti-Phishing Working Group (APWG), and SMU High Assurance Computing and Networking (HACNet) Lab.

Saeed wrote Chapter 6 (Phishing, Smishing, and Vishing).

Michael Becher received his master's degree in computer science in the year 2006 from RWTH Aachen University of Technology, Germany. He is currently a Ph.D. candidate at the University of Mannheim, Germany, researching on the security of mobile devices like smartphones, sponsored by mobile network operator T-Mobile. One of Michael's main research topics is dynamic analysis of mobile malware and software in general.

Michael worked on several topics in the security area previously, where he authored an article about direct memory access in FireWire and a book about Web application firewalls.

Michael wrote Chapter 8 (Analyzing Mobile Malicious Code).

Seth Fogie is the VP of Dallas-based Airscanner Corporation, where he oversees the development of security software for the Windows Mobile (Pocket PC) platform. He has coauthored numerous technical books on information security, including the best-selling *Maximum Wireless Security* and *Windows Internet Security: Protecting Your Critical Data* from Sams Publishing, *Security Warrior* from O'Reilly, and *Cross Site Scripting Attacks: XSS Exploits and Defense* from Syngress. Seth frequently speaks at IT and security conferences/seminars, including Black Hat, Defcon, CSI, and Dallascon. In addition, Seth has coauthored the HIPAA medical education course

for the Texas Medical Associate and is acting site host for security for InformIT.com, where he writes articles and reviews/manages weekly information security-related books and articles.

Seth wrote Chapter 7 (Operating System and Device Vulnerabilities) and Chapter 10 (Debugging and Disassembly of MM).

Brian Hernacki is an architect in Symantec Research Labs, where he works with a dedicated team to develop future technologies. Hernacki has more than 10 years of experience with computer security and enterprise software development. He has conducted research and commercial product development in a number of security areas, including intrusion detection and analysis techniques, honeypots, and wireless and mobile technologies. Hernacki earned a bachelor's degree in computer engineering, with honors, from the University of Michigan.

Brian wrote Chapter 11 (Mobile Malicious Code Mitigation Measures).

Jose Andre Morales is a Ph.D. graduate in computer science from Florida International University in the research area of computer virus detection based on identifying self-replication. He focuses on detecting viruses in mobile devices and develops antivirus solutions. He is a member of Sigma Xi, Upsilon Phi Epsilon, ACM and IEEE. He is also the cofounder of the Computing Hispanic Ph.D. Mailing List.

Jose wrote Chapters 3 (Timeline of Mobile Malicious Code, Hoaxes, and Threats), 4 (Overview of Malicious Mobile Code Families), and 5 (Taxonomy of Mobile Malicious Code).

Craig Wright is associate director, risk advisory services at BDO Kendalls (NSW-VIC) Pty. Ltd. He has authored numerous IT security-related articles and books. He also has designed the architecture for the world's first online casino (Lasseter's Online) in the Northern Territory. He designed and managed the implementation of many of the systems that protect the Australian Stock Exchange as well as the security policies and procedural practices within Mahindra and Mahindra, India's largest

vehicle manufacturer. The Mahindra group employs over 50,000 people in total and has numerous business interests from car to tractor manufacturing to IT outsourcing. Craig is one of the few people with a GSE certification and the first in the compliance stream. He has 27 GIAC certifications and is working on his eighth GIAC Gold paper.

Craig wrote Chapter 9 (Forensic Analysis of Mobile Malicious Code).

Acknowledgments/Contributors

The authors of this book want to thank multiple individuals, lists, and private sources within the computer security industry for their ongoing support and development of mobile malicious code products and services. The following individuals significantly contributed to content within this book as noted for each:

Collin Mulliner is a programmer, hacker, and a full-time security researcher. Collin's main area of research is the security of mobile devices and networks with a special emphasis on mobile and smartphones. In recent years Collin was doing a lot of research and development on Bluetooth. He created the first Bluetooth port scanner. Since 1997, Collin has done projects for most of the existing mobile device platforms. In 2006, Collin received a master's in computer science degree from the University of California, Santa Barbara.

Collin wrote sections on MMS, Palm, and J2ME in Chapter 7.

Ralf Hund is a master's candidate in mathematics and computer science at the University of Mannheim, Germany. As a student helper at the Laboratory for Dependable Distributed Systems, he has completed work that includes the development of a sandbox for the Windows Mobile platform. He has a special interest in practical aspects of IT security (e.g., software security, static malware analysis, and dynamic malware analysis).

Ralf has more than 10 years of experience in reverse engineering and programming on Windows and Linux operating systems, with a special focus on low-level details.

Ralf wrote the technical sections of Chapter 8 on behavioral analysis of MMC.

Additional individuals we would like to thank for helping in technical review include Mikko H. Hypponen, Fred Doyle, Joep Gommers, and Josh Murray.

Contents

Chapter 1 Introduction to Mobile Malware
Introduction
Understanding Why Mobile Malware Matters Today
An Introduction to MM Threats
An Introduction to Mobile Security Terminology
Vectors for Spreading MM
Bluetooth
MMC
Multimedia Messaging Service (MMS)
HTTP 10
SMS
Attack Types
Hacking Defaults
Denial-of-Service (DoS)
Exploit
Bloover/II
Bluebug
BlueBump
BlueChop11
BlueDump
Bluejacking12
Blueprinting
BlueSmack
Bluesnarf/++
BlueSniff
Bluetooone
Car Whispherer
HeloMoto
RedFang
Snarf
Warnibbling
MM Terms
Ad/Spyware
Mobile Malware

xii Contents

	Payload	
	Rogue Software	14
	Trojan	14
	Virus	14
	Worm	
Summ	ary	15
Solutio	ns Fast Track	15
Freque	ntly Asked Questions	17
Chapter 2	Visual Payloads	19
Introd	iction	20
F-9	Secure RF Lab	20
Identif	ying Visual Payloads of MM	23
Ca	bir	23
Sk	ılls	25
Co	mmonWarrior	29
Bla	nkFont	32
Summ	ary	33
	ons Fast Track	
Freque	ently Asked Questions	34
Cl		
Chapter 3	Timeline of Mobile Malware,	
	Timeline of Mobile Malware, es, and Threats	35
Hoax		
Hoax Introd	es, and Threats	
Hoax Introd Qualif	es, and Threats	36
Hoax Introd Qualif in	es, and Threats uction ying Fear, Uncertainty, and Doubt (FUD)	3636
Hoax Introd Qualif in Gl	es, and Threats	363637
Hoax Introd Qualif in Gl An Hi	es, and Threats	36 37 38 55
Hoax Introd Qualif in Gl An Hi	es, and Threats	36 37 38 55 55
Hoax Introd Qualif in Gl An Hi	es, and Threats	36 37 38 55 55
Hoax Introd Qualif in Gl An Hi	es, and Threats	36 37 38 55 55
Hoax Introd Qualif in Gl An Hi	es, and Threats uction ying Fear, Uncertainty, and Doubt (FUD) the Mobile Market obal Demand for Mobile Devices storical Timeline of MM enesis (2004) Telefonica Epoc.Fake.A	36 37 38 55 55 55
Hoax Introd Qualif in Gl An Hi	es, and Threats. uction ying Fear, Uncertainty, and Doubt (FUD) the Mobile Market obal Demand for Mobile Devices storical Timeline of MM enesis (2004) Telefonica Epoc.Fake.A Hacktool.SMSDOS Worm.SymbOS.Cabir.A. Virus.WinCE.Duts.	36 37 38 55 55 56 56 57
Hoax Introd Qualif in Gl An Hi	es, and Threats. uction ying Fear, Uncertainty, and Doubt (FUD) the Mobile Market obal Demand for Mobile Devices storical Timeline of MM enesis (2004) Telefonica Epoc.Fake.A Hacktool.SMSDOS Worm.SymbOS.Cabir.A. Virus.WinCE.Duts. Backdoor.WinCE.Brador	36 37 38 55 55 56 56 57 57
Hoax Introd Qualif in Gl An Hi Go	es, and Threats. uction ying Fear, Uncertainty, and Doubt (FUD) the Mobile Market obal Demand for Mobile Devices storical Timeline of MM enesis (2004) Telefonica Epoc.Fake.A Hacktool.SMSDOS Worm.SymbOS.Cabir.A. Virus.WinCE.Duts. Backdoor.WinCE.Brador Trojan.Skulls.A	36 37 38 55 55 56 56 57 57
Hoax Introd Qualif in Gl An Hi Go	es, and Threats uction ying Fear, Uncertainty, and Doubt (FUD) n the Mobile Market obal Demand for Mobile Devices storical Timeline of MM enesis (2004) Telefonica Epoc.Fake.A Hacktool.SMSDOS Worm.SymbOS.Cabir.A. Virus.WinCE.Duts. Backdoor.WinCE.Brador Trojan.Skulls.A iddle Ages (2005)	36 37 38 55 55 56 56 57 57 57 58
Hoax Introd Qualif in Gl An Hi Go	es, and Threats. uction ying Fear, Uncertainty, and Doubt (FUD) in the Mobile Market obal Demand for Mobile Devices storical Timeline of MM enesis (2004) Telefonica Epoc.Fake.A Hacktool.SMSDOS Worm.SymbOS.Cabir.A. Virus.WinCE.Duts. Backdoor.WinCE.Brador Trojan.Skulls.A iddle Ages (2005) Trojan.SymbOS.Cardtrap	36 37 38 55 55 56 57 57 57 58
Hoax Introd Qualif in Gl An Hi Go	es, and Threats. uction ying Fear, Uncertainty, and Doubt (FUD) the Mobile Market obal Demand for Mobile Devices storical Timeline of MM enesis (2004) Telefonica Epoc.Fake.A Hacktool.SMSDOS Worm.SymbOS.Cabir.A. Virus.WinCE.Duts Backdoor.WinCE.Brador Trojan.Skulls.A iddle Ages (2005) Trojan.SymbOS.Cardtrap Trojan.SymbOS.PbStealer	36 37 38 55 55 56 57 57 57 58 58 59
Hoax Introd Qualif in Gl An Hi Go	es, and Threats. uction ying Fear, Uncertainty, and Doubt (FUD) in the Mobile Market obal Demand for Mobile Devices storical Timeline of MM enesis (2004) Telefonica Epoc.Fake.A Hacktool.SMSDOS Worm.SymbOS.Cabir.A. Virus.WinCE.Duts. Backdoor.WinCE.Brador Trojan.Skulls.A iddle Ages (2005) Trojan.SymbOS.Cardtrap	36 37 38 55 55 56 56 57 57 57 58 59 59

Conte	ents
Worm.MSIL.Cxover	60
Trojan-Spy.SymbOS.Flexispy	61
Worm.SymbOS.Mobler.A	61
SymbOS. Viver. A	62
Modern Times and Beyond (2008 –)	
Trojan.iPhone.A	62
WinCE.InfoJack.A	63
Trojan.POC.MM.Gotcha.A	. 63
Worm.POC.MM.Stranger.A	. 64
Future Threats	
Summary	. 67
Solutions Fast Track	
Frequently Asked Questions	
Notes	. 70
Chapter 4 Overview of Mobile Malware	
Families	. 71
Introduction	. 72
Cabir	. 72
Skuller	. 78
Doomboot	
Cardtrap	. 87
Summary	
Solutions Fast Track	
Frequently Asked Questions	. 92
Chapter 5 Taxonomy of Mobile Malware	. 93
Introduction	. 94
Infection Strategy	. 95
Wireless Communication	. 95
MMS	. 95
Bluetooth	. 99
E-mail	102
Wired Communication	103
Removable Storage	
Device-to-PC (D2P) Synchronization	105
Other Infection Strategies	
SMS	
Wi-Fi	
OS Vulnerabilities	107

xiii

xiv Contents

Wireless Communication 109 SMS 109 Bluetooth 112 Wired Communication 113 Removable Storage 113 Payload 114 Communications Component 114 Sending SMS Messages: Nuisance 115 File System 115 Infecting Files: Nuisance 115 Overwriting Files: Nuisance 115 Multimedia Components 116 Taking Photos: Devious 116 Recording Voices: Devious 116 Clandestine Video Recorder: Devious 116
Bluetooth 112 Wired Communication 113 Removable Storage 113 Payload 114 Communications Component 114 Sending SMS Messages: Nuisance 115 File System 115 Infecting Files: Nuisance 115 Overwriting Files: Nuisance 115 Multimedia Components 116 Taking Photos: Devious 116 Recording Voices: Devious 116
Wired Communication. 113 Removable Storage 113 Payload 114 Communications Component 114 Sending SMS Messages: Nuisance 115 File System. 115 Infecting Files: Nuisance 115 Overwriting Files: Nuisance 115 Multimedia Components 116 Taking Photos: Devious 116 Recording Voices: Devious 116
Removable Storage 113 Payload 114 Communications Component 114 Sending SMS Messages: Nuisance 115 File System 115 Infecting Files: Nuisance 115 Overwriting Files: Nuisance 115 Multimedia Components 116 Taking Photos: Devious 116 Recording Voices: Devious 116
Payload 114 Communications Component 114 Sending SMS Messages: Nuisance 115 File System 115 Infecting Files: Nuisance 115 Overwriting Files: Nuisance 115 Multimedia Components 116 Taking Photos: Devious 116 Recording Voices: Devious 116
Communications Component 114 Sending SMS Messages: Nuisance 115 File System 115 Infecting Files: Nuisance 115 Overwriting Files: Nuisance 115 Multimedia Components 116 Taking Photos: Devious 116 Recording Voices: Devious 116
Communications Component 114 Sending SMS Messages: Nuisance 115 File System 115 Infecting Files: Nuisance 115 Overwriting Files: Nuisance 115 Multimedia Components 116 Taking Photos: Devious 116 Recording Voices: Devious 116
Sending SMS Messages: Nuisance115File System.115Infecting Files: Nuisance.115Overwriting Files: Nuisance115Multimedia Components116Taking Photos: Devious116Recording Voices: Devious116
File System. 115 Infecting Files: Nuisance. 115 Overwriting Files: Nuisance 115 Multimedia Components 116 Taking Photos: Devious 116 Recording Voices: Devious 116
Infecting Files: Nuisance.115Overwriting Files: Nuisance.115Multimedia Components.116Taking Photos: Devious.116Recording Voices: Devious.116
Overwriting Files: Nuisance115Multimedia Components116Taking Photos: Devious116Recording Voices: Devious116
Multimedia Components116Taking Photos: Devious116Recording Voices: Devious116
Taking Photos: Devious116Recording Voices: Devious116
Recording Voices: Devious
Playback: Devious
Telephone Component
Dialing Other Phone: Nuisance
Dialing Your Own Phone: Nuisance
Using the Phone to Cover Your Tracks: Devious
Data Farming
Stealing Contacts: Devious
Summary
Solutions Fast Track
Frequently Asked Questions
Chapter 6 Phishing, SMishing, and Vishing
Introduction to Phishing and Vishing
Introduction to Phishing
Phishing Mobile Devices
Bluetooth Phishing
SMS Phishing
Voice over IP Phishing
Breaking Phishing Filters via Pharming
Introduction to Pharming
Attack Details
Attack Setup
TT: 1: 1 A 1
Hiding the Attack

Contents
Web Server vhost File
The hosts allow File
Packet Capture Analysis
The EarthLink Toolbar
The Netcraft Toolbar
SpoofGuard
The Google Toolbar
Internet Explorer
Firefox
The Opera Browser
SpoofStick
Attack Prevention
IP Verification
OpenDNS
SSL and HTTPS
Virtual Private Networks
Web Proxies
Applying Machine Learning for Phishing Detection
Bayesian Additive Regression Trees
Classification and Regression Trees
Logistic Regression
Neural Networks
Random Forests
Support Vector Machines
Detecting Mobile Phishing Using a Distributed Framework
Learning Phishing E-mails
Data Standardization, Cleansing, and Transformation
Textual Analysis
Structural Analysis
Experimental Studies
Evaluation Metrics
Experimental Setup
Experimental Results
An Introduction to Vishing
How Can I Spot a Vishing Attack?
Understanding Vishers' Tools and Techniques
VoIP Server
VoIP Phone Management Software
Interactive Voice Management (IVM) Software
interactive voice intanagement (1,111) software

χV

xvi Contents

Text-To-Speech (TTS) and Interactive Voice Recording (IVR)	186
Outbound Calling	187
Vishing Packs	187
Mitigating Vishing Attacks	188
Consumer Education	188
Notifications	189
Summary	190
Solutions Fast Track	190
Frequently Asked Questions	
Notes	196
Chapter 7 Operating System and Device	
Vulnerabilities	197
Introduction	
Windows Mobile	
WM Details	
File System	
Xip	
Encryption	
Code Signing	
Operating System	
Kernel Mode vs. User Mode	
Drivers	
Memory/Process Limitation	
Vulnerability Details	
Core Operating System	
KDataStruct	
Pocket IE	
Active Sync	
Bluetooth	
PocketPC MMS-Based Vulnerabilities	
The MMS Client	
PocketPC MMS Composer	
Code Execution via SMIL	
Shellcode Walkthrough	
Denial-of-Service via WAP Push and Wi-Fi	208
Attack Details	
Bypassing Code-Signing Protections	
Installing Your Own Certificate	

	Content	s xvii
Registry Hack	213	1
Buffer Overflow vs. Code Signing	213	1
Exploiting WM	212	2
The Tools	212	2
IDA Pro		
Visual Studio 2005	213	3
WM Applications	21	3
The Process	21.	3
An Example - FlexWallet	21	4
Setup	21	4
Initial Analysis and Target Selection	21	5
Probe Target	21	6
Analyze Crash	21	7
Building the Exploit	21	9
iPhone		
iPhone System Details	22	2
Operating System	22	2
Applications	22	23
Open Source Tool Chain	22	25
Exploiting the iPhone	22	25
iPhone Hacking	22	25
The Jailbreak Process	22	25
Exploit Details		
A Flawed Shell Model		
Root Account		
Static Addressing	22	28
Static Systems		
Reuse of Old Code		
Metasploit		
An iPhone Exploit in Action	22	29
Metasploit vs. libtiff		
Tool Tip — Iphonedbg		
Symbian		
Symbian Details		
File System		
Operating System		
Security	23)) 35
Platform Security		
Code Signing	2.	30

xviii Contents

Vulnerability Landscape for Symbian	237
Warezed Installers	237
Social Engineering	239
BlackBerry	240
BlackBerry Details	241
BlackBerry Vulnerabilities	241
General Security Issues	242
BlackBerry Enterprise Server Issues	242
BBProxy	242
J2ME – Java 2 Micro Edition	
MIDlets – J2ME Applications	245
J2ME Security	
MIDlet Permissions and Signing	
Past Vulnerabilities	246
Siemens S55 Permission Request Race Condition	247
KVM Buffer Overflow Vulnerability	247
Current Vulnerabilities	
The Nokia 6131 NFC Silent MIDlet	
Installation Vulnerability	247
PushRegistry Abuse on the Nokia 6131 NFC	
Other Notable Platforms	248
Palm OS	
Palm OS Security	
The Palm OS Password Issue	
Palm OS Security Lock ByPass Vulnerabilities	
Palm OS Malware	
The LibertyCrack Trojan	
The Phage Virus	
The Vapor Trojan	
Linux	
Android	250
Exploit Prevention	
WM Defense	252
iPhone Defense	252
J2ME Defense	
Symbian Defense	
Handheld Exploitation	
Wireless Attacks	
802. 11 Wardriving	
802.11 Jamming	