

# Penetration Testing

*A Hands-On Introduction to Hacking*



Georgia Weidman

*Foreword by Peter Van Eckhoutte*





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## **PENETRATION TESTING**



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**A Hands-On Introduction  
to Hacking**

**by Georgia Weidman**



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San Francisco

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In memory of Jess Hilden

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## About the Author

Georgia Weidman is a penetration tester and researcher, as well as the founder of Bulb Security, a security consulting firm. She presents at conferences around the world including Black Hat, ShmooCon, and DerbyCon, and teaches classes on topics such as penetration testing, mobile hacking, and exploit development. Her work in mobile security has been featured in print and on television internationally. She was awarded a DARPA Cyber Fast Track grant to continue her work in mobile device security.



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# BRIEF CONTENTS

Foreword by Peter Van Eeckhoutte . . . . .	xix
Acknowledgments . . . . .	xxiii
Introduction . . . . .	xxv
Chapter 0: Penetration Testing Primer . . . . .	1

## **PART I: THE BASICS**

Chapter 1: Setting Up Your Virtual Lab . . . . .	9
Chapter 2: Using Kali Linux . . . . .	55
Chapter 3: Programming . . . . .	75
Chapter 4: Using the Metasploit Framework . . . . .	87

## **PART II: ASSESSMENTS**

Chapter 5: Information Gathering . . . . .	113
Chapter 6: Finding Vulnerabilities . . . . .	133
Chapter 7: Capturing Traffic . . . . .	155

## **PART III: ATTACKS**

Chapter 8: Exploitation . . . . .	179
Chapter 9: Password Attacks . . . . .	197
Chapter 10: Client-Side Exploitation . . . . .	215
Chapter 11: Social Engineering . . . . .	243
Chapter 12: Bypassing Antivirus Applications . . . . .	257
Chapter 13: Post Exploitation . . . . .	277
Chapter 14: Web Application Testing . . . . .	313
Chapter 15: Wireless Attacks . . . . .	339

---

**PART IV: EXPLOIT DEVELOPMENT**

Chapter 16: A Stack-Based Buffer Overflow in Linux . . . . . 361

Chapter 17: A Stack-Based Buffer Overflow in Windows . . . . . 379

Chapter 18: Structured Exception Handler Overwrites . . . . . 401

Chapter 19: Fuzzing, Porting Exploits, and Metasploit Modules. . . . . 421

**PART V: MOBILE HACKING**

Chapter 20: Using the Smartphone Pentest Framework . . . . . 445

Resources . . . . . 473

Index . . . . . 477

---

# CONTENTS IN DETAIL

<b>FOREWORD by Peter Van Eeckhoutte</b>	<b>xix</b>
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<b>ACKNOWLEDGMENTS</b>	<b>xxiii</b>
------------------------	--------------

<b>INTRODUCTION</b>	<b>xxv</b>
---------------------	------------

A Note of Thanks . . . . .	.xxvi
About This Book . . . . .	.xxvi
Part I: The Basics . . . . .	.xxvii
Part II: Assessments . . . . .	.xxvii
Part III: Attacks . . . . .	.xxvii
Part IV: Exploit Development . . . . .	.xxviii
Part V: Mobile Hacking . . . . .	.xxviii

<b>0</b>	
<b>PENETRATION TESTING PRIMER</b>	<b>1</b>

The Stages of the Penetration Test . . . . .	2
Pre-engagement . . . . .	2
Information Gathering . . . . .	4
Threat Modeling . . . . .	4
Vulnerability Analysis . . . . .	4
Exploitation . . . . .	4
Post Exploitation . . . . .	4
Reporting . . . . .	5
Summary . . . . .	6

## **PART I**

### **THE BASICS**

<b>1</b>	
<b>SETTING UP YOUR VIRTUAL LAB</b>	<b>9</b>

Installing VMware . . . . .	9
Setting Up Kali Linux . . . . .	10
Configuring the Network for Your Virtual Machine . . . . .	13
Installing Nessus . . . . .	17
Installing Additional Software . . . . .	20
Setting Up Android Emulators . . . . .	22
Smartphone Pentest Framework . . . . .	27
Target Virtual Machines . . . . .	28
Creating the Windows XP Target . . . . .	29
VMware Player on Microsoft Windows . . . . .	29
VMware Fusion on Mac OS . . . . .	31
Installing and Activating Windows . . . . .	32

Installing VMware Tools . . . . .	35
Turning Off Windows Firewall . . . . .	37
Setting User Passwords . . . . .	37
Setting a Static IP Address . . . . .	38
Making XP Act Like It's a Member of a Windows Domain . . . . .	39
Installing Vulnerable Software . . . . .	40
Installing Immunity Debugger and Mona . . . . .	46
Setting Up the Ubuntu 8.10 Target . . . . .	48
Creating the Windows 7 Target . . . . .	48
Creating a User Account . . . . .	48
Opting Out of Automatic Updates . . . . .	50
Setting a Static IP Address . . . . .	51
Adding a Second Network Interface . . . . .	52
Installing Additional Software . . . . .	52
Summary . . . . .	54

## **2 USING KALI LINUX 55**

Linux Command Line . . . . .	56
The Linux Filesystem . . . . .	56
Changing Directories . . . . .	56
Learning About Commands: The Man Pages . . . . .	57
User Privileges . . . . .	58
Adding a User . . . . .	58
Adding a User to the sudoers File . . . . .	59
Switching Users and Using sudo . . . . .	59
Creating a New File or Directory . . . . .	60
Copying, Moving, and Removing Files . . . . .	60
Adding Text to a File . . . . .	61
Appending Text to a File . . . . .	61
File Permissions . . . . .	61
Editing Files . . . . .	62
Searching for Text . . . . .	63
Editing a File with vi . . . . .	63
Data Manipulation . . . . .	64
Using grep . . . . .	65
Using sed . . . . .	65
Pattern Matching with awk . . . . .	66
Managing Installed Packages . . . . .	66
Processes and Services . . . . .	67
Managing Networking . . . . .	67
Setting a Static IP Address . . . . .	68
Viewing Network Connections . . . . .	69
Netcat: The Swiss Army Knife of TCP/IP Connections . . . . .	69
Check to See If a Port Is Listening . . . . .	70
Opening a Command Shell Listener . . . . .	70
Pushing a Command Shell Back to a Listener . . . . .	71
Automating Tasks with cron Jobs . . . . .	72
Summary . . . . .	73

<b>3</b>	<b>PROGRAMMING</b>	<b>75</b>
Bash Scripting . . . . .		75
Ping . . . . .		76
A Simple Bash Script . . . . .		76
Running Our Script . . . . .		77
Adding Functionality with if Statements . . . . .		77
A for Loop . . . . .		78
Streamlining the Results . . . . .		79
Python Scripting . . . . .		81
Connecting to a Port . . . . .		83
if Statements in Python . . . . .		83
Writing and Compiling C Programs . . . . .		84
Summary . . . . .		85

<b>4</b>	<b>USING THE METASPLOIT FRAMEWORK</b>	<b>87</b>
Starting Metasploit . . . . .		88
Finding Metasploit Modules . . . . .		90
The Module Database . . . . .		90
Built-In Search . . . . .		91
Setting Module Options . . . . .		94
RHOST . . . . .		94
RPORT . . . . .		95
SMBPIPE . . . . .		95
Exploit Target . . . . .		95
Payloads (or Shellcode) . . . . .		96
Finding Compatible Payloads . . . . .		96
A Test Run . . . . .		97
Types of Shells . . . . .		98
Bind Shells . . . . .		98
Reverse Shells . . . . .		98
Setting a Payload Manually . . . . .		99
Msfcli . . . . .		101
Getting Help . . . . .		101
Showing Options . . . . .		101
Payloads . . . . .		102
Creating Standalone Payloads with Msfvenom . . . . .		103
Choosing a Payload . . . . .		104
Setting Options . . . . .		104
Choosing an Output Format . . . . .		104
Serving Payloads . . . . .		105
Using the Multi/Handler Module . . . . .		105
Using an Auxiliary Module . . . . .		107
Summary . . . . .		109

---

## **PART II ASSESSMENTS**

### **5 INFORMATION GATHERING 113**

Open Source Intelligence Gathering . . . . .	114
Netcraft . . . . .	114
Whois Lookups . . . . .	115
DNS Reconnaissance . . . . .	116
Searching for Email Addresses . . . . .	118
Maltego . . . . .	119
Port Scanning . . . . .	123
Manual Port Scanning . . . . .	124
Port Scanning with Nmap . . . . .	125
Summary . . . . .	132

### **6 FINDING VULNERABILITIES 133**

From Nmap Version Scan to Potential Vulnerability . . . . .	133
Nessus . . . . .	134
Nessus Policies . . . . .	134
Scanning with Nessus . . . . .	138
A Note About Nessus Rankings . . . . .	140
Why Use Vulnerability Scanners? . . . . .	141
Exporting Nessus Results . . . . .	141
Researching Vulnerabilities . . . . .	142
The Nmap Scripting Engine . . . . .	142
Running a Single NSE Script . . . . .	144
Metasploit Scanner Modules . . . . .	146
Metasploit Exploit Check Functions . . . . .	147
Web Application Scanning . . . . .	148
Nikto . . . . .	149
Attacking XAMPP . . . . .	149
Default Credentials . . . . .	150
Manual Analysis . . . . .	151
Exploring a Strange Port . . . . .	151
Finding Valid Usernames . . . . .	153
Summary . . . . .	153

### **7 CAPTURING TRAFFIC 155**

Networking for Capturing Traffic . . . . .	156
Using Wireshark . . . . .	156
Capturing Traffic . . . . .	156
Filtering Traffic . . . . .	158
Following a TCP Stream . . . . .	159
Dissecting Packets . . . . .	160

ARP Cache Poisoning . . . . .	160
ARP Basics . . . . .	161
IP Forwarding . . . . .	163
ARP Cache Poisoning with Arpspoof . . . . .	164
Using ARP Cache Poisoning to Impersonate the Default Gateway . . . . .	165
DNS Cache Poisoning . . . . .	167
Getting Started . . . . .	168
Using Dnsspoof . . . . .	169
SSL Attacks . . . . .	170
SSL Basics . . . . .	170
Using Ettercap for SSL Man-in-the-Middle Attacks . . . . .	171
SSL Stripping . . . . .	173
Using SSLstrip . . . . .	174
Summary . . . . .	175

## **PART III ATTACKS**

### **8 EXPLOITATION 179**

Revisiting MS08-067 . . . . .	180
Metasploit Payloads . . . . .	180
Meterpreter . . . . .	181
Exploiting WebDAV Default Credentials . . . . .	182
Running a Script on the Target Web Server . . . . .	183
Uploading a Msfvenom Payload . . . . .	183
Exploiting Open phpMyAdmin . . . . .	186
Downloading a File with TFTP . . . . .	187
Downloading Sensitive Files . . . . .	188
Downloading a Configuration File . . . . .	188
Downloading the Windows SAM . . . . .	189
Exploiting a Buffer Overflow in Third-Party Software . . . . .	190
Exploiting Third-Party Web Applications . . . . .	191
Exploiting a Compromised Service . . . . .	193
Exploiting Open NFS Shares . . . . .	194
Summary . . . . .	196

### **9 PASSWORD ATTACKS 197**

Password Management . . . . .	197
Online Password Attacks . . . . .	198
Wordlists . . . . .	199
Guessing Usernames and Passwords with Hydra . . . . .	202
Offline Password Attacks . . . . .	203
Recovering Password Hashes from a Windows SAM File . . . . .	204
Dumping Password Hashes with Physical Access . . . . .	206
LM vs. NTLM Hashing Algorithms . . . . .	208
The Trouble with LM Password Hashes . . . . .	209

John the Ripper . . . . .	210
Cracking Linux Passwords . . . . .	212
Cracking Configuration File Passwords . . . . .	212
Rainbow Tables . . . . .	213
Online Password-Cracking Services . . . . .	213
Dumping Plaintext Passwords from Memory with Windows Credential Editor . . . . .	213
Summary . . . . .	214

**10**  
**CLIENT-SIDE EXPLOITATION** **215**

Bypassing Filters with Metasploit Payloads . . . . .	216
All Ports . . . . .	216
HTTP and HTTPS Payloads . . . . .	217
Client-Side Attacks . . . . .	218
Browser Exploitation . . . . .	219
PDF Exploits . . . . .	225
Java Exploits . . . . .	230
browser_autopwn . . . . .	235
Winamp . . . . .	237
Summary . . . . .	240

**11**  
**SOCIAL ENGINEERING** **243**

The Social-Engineer Toolkit . . . . .	244
Spear-Phishing Attacks . . . . .	245
Choosing a Payload . . . . .	246
Setting Options . . . . .	247
Naming Your File . . . . .	247
Single or Mass Email . . . . .	247
Creating the Template . . . . .	248
Setting the Target . . . . .	248
Setting Up a Listener . . . . .	249
Web Attacks . . . . .	250
Mass Email Attacks . . . . .	253
Multipronged Attacks . . . . .	255
Summary . . . . .	255

**12**  
**BYPASSING ANTIVIRUS APPLICATIONS** **257**

Trojans . . . . .	258
Msfvenom . . . . .	258
How Antivirus Applications Work . . . . .	260
Microsoft Security Essentials . . . . .	261
VirusTotal . . . . .	262
Getting Past an Antivirus Program . . . . .	263
Encoding . . . . .	263
Custom Cross Compiling . . . . .	266
Encrypting Executables with Hyperion . . . . .	269
Evading Antivirus with Veil-Evasion . . . . .	270



Hiding in Plain Sight . . . . .	274
Summary . . . . .	274

**13**  
**POST EXPLOITATION** **277**

Meterpreter . . . . .	278
Using the upload Command . . . . .	279
getuid . . . . .	279
Other Meterpreter Commands . . . . .	280
Meterpreter Scripts . . . . .	280
Metasploit Post-Exploitation Modules . . . . .	281
Railgun . . . . .	283
Local Privilege Escalation . . . . .	283
getsystem on Windows . . . . .	283
Local Escalation Module for Windows . . . . .	284
Bypassing UAC on Windows . . . . .	285
Udev Privilege Escalation on Linux . . . . .	287
Local Information Gathering . . . . .	291
Searching for Files . . . . .	291
Keylogging . . . . .	292
Gathering Credentials . . . . .	292
net Commands . . . . .	294
Another Way In . . . . .	295
Checking Bash History . . . . .	295
Lateral Movement . . . . .	296
PSEXec . . . . .	296
Pass the Hash . . . . .	298
SSHEXec . . . . .	299
Token Impersonation . . . . .	300
Incognito . . . . .	301
SMB Capture . . . . .	302
Pivoting . . . . .	304
Adding a Route in Metasploit . . . . .	305
Metasploit Port Scanners . . . . .	306
Running an Exploit through a Pivot . . . . .	306
Socks4a and ProxyChains . . . . .	307
Persistence . . . . .	309
Adding a User . . . . .	309
Metasploit Persistence . . . . .	310
Creating a Linux cron Job . . . . .	311
Summary . . . . .	311

**14**  
**WEB APPLICATION TESTING** **313**

Using Burp Proxy . . . . .	314
SQL Injection . . . . .	319
Testing for SQL Injection Vulnerabilities . . . . .	320
Exploiting SQL Injection Vulnerabilities . . . . .	321
Using SQLMap . . . . .	321
XPath Injection . . . . .	323

Local File Inclusion . . . . .	324
Remote File Inclusion . . . . .	327
Command Execution . . . . .	327
Cross-Site Scripting . . . . .	329
Checking for a Reflected XSS Vulnerability . . . . .	330
Leveraging XSS with the Browser Exploitation Framework . . . . .	331
Cross-Site Request Forgery . . . . .	335
Web Application Scanning with w3af . . . . .	335
Summary . . . . .	337

**15 WIRELESS ATTACKS 339**

Setting Up . . . . .	339
Viewing Available Wireless Interfaces . . . . .	340
Scan for Access Points . . . . .	341
Monitor Mode . . . . .	341
Capturing Packets . . . . .	342
Open Wireless . . . . .	343
Wired Equivalent Privacy . . . . .	343
WEP Weaknesses . . . . .	346
Cracking WEP Keys with Aircrack-ng . . . . .	347
Wi-Fi Protected Access . . . . .	350
WPA2 . . . . .	351
The Enterprise Connection Process . . . . .	351
The Personal Connection Process . . . . .	351
The Four-Way Handshake . . . . .	352
Cracking WPA/WPA2 Keys . . . . .	353
Wi-Fi Protected Setup . . . . .	356
Problems with WPS . . . . .	356
Cracking WPS with Bully . . . . .	357
Summary . . . . .	357

**PART IV EXPLOIT DEVELOPMENT**

**16 A STACK-BASED BUFFER OVERFLOW IN LINUX 361**

Memory Theory . . . . .	362
Linux Buffer Overflow . . . . .	364
A Vulnerable Program . . . . .	365
Causing a Crash . . . . .	366
Running GDB . . . . .	367
Crashing the Program in GDB . . . . .	372

Controlling EIP . . . . .	373
Hijacking Execution . . . . .	375
Endianness . . . . .	376
Summary . . . . .	378

**17**  
**A STACK-BASED BUFFER OVERFLOW IN WINDOWS** **379**

Searching for a Known Vulnerability in War-FTP . . . . .	380
Causing a Crash . . . . .	382
Locating EIP . . . . .	384
Generating a Cyclical Pattern to Determine Offset . . . . .	385
Verifying Offsets . . . . .	388
Hijacking Execution . . . . .	390
Getting a Shell . . . . .	395
Summary . . . . .	400

**18**  
**STRUCTURED EXCEPTION HANDLER OVERWRITES** **401**

SEH Overwrite Exploits . . . . .	403
Passing Control to SEH . . . . .	407
Finding the Attack String in Memory . . . . .	408
POP POP RET . . . . .	411
SafeSEH . . . . .	412
Using a Short Jump . . . . .	416
Choosing a Payload . . . . .	418
Summary . . . . .	419

**19**  
**FUZZING, PORTING EXPLOITS, AND METASPLOIT MODULES** **421**

Fuzzing Programs . . . . .	421
Finding Bugs with Code Review . . . . .	422
Fuzzing a Trivial FTP Server . . . . .	422
Attempting a Crash . . . . .	424
Porting Public Exploits to Meet Your Needs . . . . .	427
Finding a Return Address . . . . .	429
Replacing Shellcode . . . . .	430
Editing the Exploit . . . . .	430
Writing Metasploit Modules . . . . .	432
A Similar Exploit String Module . . . . .	435
Porting Our Exploit Code . . . . .	435
Exploitation Mitigation Techniques . . . . .	439
Stack Cookies . . . . .	440
Address Space Layout Randomization . . . . .	440
Data Execution Prevention . . . . .	441
Mandatory Code Signing . . . . .	441
Summary . . . . .	442

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## **PART V MOBILE HACKING**

### **20 USING THE SMARTPHONE PENTEST FRAMEWORK 445**

Mobile Attack Vectors . . . . .	446
Text Messages . . . . .	446
Near Field Communication . . . . .	446
QR Codes . . . . .	447
The Smartphone Pentest Framework . . . . .	447
Setting Up SPF . . . . .	447
Android Emulators . . . . .	449
Attaching a Mobile Modem . . . . .	449
Building the Android App . . . . .	449
Deploying the App . . . . .	450
Attaching the SPF Server and App . . . . .	452
Remote Attacks . . . . .	453
Default iPhone SSH Login . . . . .	453
Client-Side Attacks . . . . .	454
Client-Side Shell . . . . .	454
USSD Remote Control . . . . .	456
Malicious Apps . . . . .	458
Creating Malicious SPF Agents . . . . .	459
Mobile Post Exploitation . . . . .	464
Information Gathering . . . . .	464
Remote Control . . . . .	465
Pivoting Through Mobile Devices . . . . .	466
Privilege Escalation . . . . .	471
Summary . . . . .	472

### **RESOURCES 473**

### **INDEX 477**

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## FOREWORD

I met Georgia Weidman at a conference almost two years ago. Intrigued by what she was doing in the mobile device security field, I started following her work. At nearly every conference I've attended since then, I've run into Georgia and found her passionately sharing knowledge and ideas about mobile device security and her Smartphone Pentesting Framework.

In fact, mobile device security is only one of the things Georgia does. Georgia performs penetration tests for a living; travels the world to deliver training on pentesting, the Metasploit Framework, and mobile device security; and presents novel and innovative ideas on how to assess the security of mobile devices at conferences.

Georgia spares no effort in diving deeper into more advanced topics and working hard to learn new things. She is a former student of my (rather challenging) Exploit Development Bootcamp, and I can attest to the fact that she did very well throughout the entire class. Georgia is a true

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hacker—always willing to share her findings and knowledge with our great infosec community—and when she asked me to write the foreword to this book, I felt very privileged and honored.

As a chief information security officer, a significant part of my job revolves around designing, implementing, and managing an information security program. Risk management is a very important aspect of the program because it allows a company to measure and better understand its current position in terms of risk. It also allows a company to define priorities and implement measures to decrease risk to an acceptable level, based on the company's core business activities, its mission and vision, and legal requirements.

Identifying all critical business processes, data, and data flows inside a company is one of the first steps in risk management. This step includes compiling a detailed inventory of all IT systems (equipment, networks, applications, interfaces, and so on) that support the company's critical business processes and data from an IT perspective. The task is time consuming and it's very easy to forget about certain systems that at first don't seem to be directly related to supporting critical business processes and data, but that are nonetheless critical because other systems depend on them. This inventory is fundamentally important and is the perfect starting point for a risk-assessment exercise.

One of the goals of an information-security program is to define what is necessary to preserve the desired level of confidentiality, integrity, and availability of a company's IT systems and data. Business process owners should be able to define their goals, and our job as information-security professionals is to implement measures to make sure we meet these goals and to test how effective these measures are.

There are a few ways to determine the actual risk to the confidentiality, integrity, and availability of a company's systems. One way is to perform a technical assessment to see how easy it would be for an adversary to undermine the desired level of confidentiality, break the integrity of systems, and interfere with the availability of systems, either by attacking them directly or by attacking the users with access to these systems.

That's where a penetration tester (pentester, ethical hacker, or whatever you want to call it) comes into play. By combining knowledge of how systems are designed, built, and maintained with a skillset that includes finding creative ways around defenses, a good pentester is instrumental in identifying and demonstrating the strength of a company's information-security posture.

If you would like to become a penetration tester or if you are a systems/network administrator who wants to know more about how to test the security of your systems, this book is perfect for you. You'll learn some of the more technical phases of a penetration test, beginning with the initial information-gathering process. You'll continue with explanations of how to exploit vulnerable networks and applications as you delve deeper into the network in order to determine how much damage could be done.

This book is unique because it's not just a compilation of tools with a discussion of the available options. It takes a very practical approach,

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designed around a lab—a set of virtual machines with vulnerable applications—so you can safely try various pentesting techniques using publicly available free tools.

Each chapter starts with an introduction and contains one or more hands-on exercises that will allow you to better understand how vulnerabilities can be discovered and exploited. You'll find helpful tips and tricks from an experienced professional pentester, real-life scenarios, proven techniques, and anecdotes from actual penetration tests.

Entire books can be written (and have been) on the topics covered in each chapter in this book, and this book doesn't claim to be the Wikipedia of pentesting. That said, it will certainly provide you with more than a first peek into the large variety of attacks that can be performed to assess a target's security posture. Thanks to its guided, hands-on approach, you'll learn how to use the Metasploit Framework to exploit vulnerable applications and use a single hole in a system's defenses to bypass all perimeter protections, dive deeper into the network, and exfiltrate data from the target systems. You'll learn how to bypass antivirus programs and perform efficient social-engineering attacks using tools like the Social-Engineer Toolkit. You'll see how easy it would be to break into a corporate Wi-Fi network, and how to use Georgia's Smartphone Pentest Framework to assess how damaging a company's bring your own device policy (or lack thereof) could be. Each chapter is designed to trigger your interest in pentesting and to provide you with first-hand insight into what goes on inside a pentester's mind.

I hope this book will spark your creativity and desire to dive deeper into certain areas; to work hard and learn more; and to do your own research and share your knowledge with the community. As technology develops, environments change, and companies increasingly rely on technology to support their core business activities, the need for smart pentesters will increase. You are the future of this community and the information-security industry.

Good luck taking your first steps into the exciting world of pentesting. I'm sure you will enjoy this book!

Peter "corelanc0d3r" Van Eeckhoutte  
Founder of Corelan Team





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