Foreword	xix
Chapter 1 Windows of Vulnerability	1
Introduction	
What Are Vulnerabilities?	2
Understanding the Risks Posed by Vulnerabilities	
Summary	
Solutions Fast Track	
Frequently Asked Questions	
Chapter 2 Vulnerability Assessment 101	17
Introduction	18
What Is a Vulnerability Assessment?	18
Step 1: Information Gathering/Discovery	18
Step 2: Enumeration	21
Step 3: Detection	22
Seeking Out Vulnerabilities	24
Detecting Vulnerabilities via Security Technologies	24
Deciphering VA Data	
Gathered by Security Technologies	26
Accessing Vulnerabilities	
via Remediation (Patch) Technologies	29
Extracting VA Data from Remediation Repositorie	es30
Leveraging Configuration Tools to Assess Vulnerabil	lities 32
The Importance of Seeking Out Vulnerabilities	34
Looking Closer at the Numbers	35
Summary	
Solutions Fast Track	40
Frequently Asked Questions	41

Chapter 3 Vulnerability Assessment Tools	45
Introduction	46
Features of a Good Vulnerability Assessment Tool	46
Using a Vulnerability Assessment Tool	50
Step 1: Identify the Hosts on Your Network	51
Step 2: Classify the Hosts into Asset Groups	55
Step 3: Create an Audit Policy	56
Step 4: Launch the Scan	58
Step 5: Analyze the Reports	
Step 6: Remediate Where Necessary	
Summary	
Solutions Fast Track	
Frequently Asked Questions	63
Chapter 4 Vulnerability Assessment: Step One	65
Introduction	66
Know Your Network	67
Classifying Your Assets	74
I Thought This Was a Vulnerability Assessment Chapter .	78
Summary	82
Solutions Fast Track	82
Frequently Asked Questions	83
Chapter 5 Vulnerability Assessment: Step Two	85
Introduction	86
An Effective Scanning Program	86
Scanning Your Network	88
When to Scan	
Summary	
Solutions Fast Track	
Frequently Asked Questions	101
Chapter 6 Going Further	. 103
Introduction	
Types of Penetration Tests	
Scenario: An Internal Network Attack	
Client Network	
Step 1: Information Gathering	109

Operating System Detection	.110
Discovering Open Ports and Enumerating	.112
Step 2: Determine Vulnerabilities	.116
Setting Up the VA	.117
Interpreting the VA Results	.120
Penetration Testing	.125
Step 3: Attack and Penetrate	.126
Uploading Our Data	.126
Attack and Penetrate	.129
Searching the Web Server for Information	.134
Discovering Web Services	.135
Vulnerability Assessment versus a Penetration Test	.139
Tips for Deciding between Conducting a VA or a	
Penetration Test	.139
Internal versus External	.141
Summary	.144
Solutions Fast Track	.144
Frequently Asked Questions	.145
Chapter 7 Vulnerability Management	
Chapter 7 Vulnerability Management	147
Introduction	147 .148
·	147 .148 .149
Introduction	147 .148 .149 .150
Introduction	147 .148 .149 .150 .151
Introduction	147 .148 .149 .150 .151 .152
Introduction The Vulnerability Management Plan The Six Stages of Vulnerability Management Stage One: Identify Stage Two: Assess	147 .148 .149 .150 .151 .152 .153
Introduction The Vulnerability Management Plan The Six Stages of Vulnerability Management Stage One: Identify Stage Two: Assess Stage Three: Remediate	147 .148 .149 .150 .151 .152 .153 .154
Introduction The Vulnerability Management Plan The Six Stages of Vulnerability Management Stage One: Identify Stage Two: Assess Stage Three: Remediate Stage Four: Report	147 .148 .149 .150 .151 .152 .153 .154
Introduction The Vulnerability Management Plan The Six Stages of Vulnerability Management Stage One: Identify Stage Two: Assess Stage Three: Remediate Stage Four: Report Stage Five: Improve	147 .148 .149 .150 .151 .152 .153 .154 .155
Introduction The Vulnerability Management Plan The Six Stages of Vulnerability Management Stage One: Identify Stage Two: Assess Stage Three: Remediate Stage Four: Report Stage Five: Improve Stage Six: Monitor	147 .148 .149 .150 .151 .152 .153 .154 .155
Introduction The Vulnerability Management Plan The Six Stages of Vulnerability Management Stage One: Identify Stage Two: Assess Stage Three: Remediate Stage Four: Report Stage Five: Improve Stage Six: Monitor Governance (What the Auditors Want to Know)	147 .148 .149 .150 .151 .152 .153 .154 .155 .156 .158
Introduction The Vulnerability Management Plan The Six Stages of Vulnerability Management Stage One: Identify Stage Two: Assess Stage Three: Remediate Stage Four: Report Stage Five: Improve Stage Six: Monitor Governance (What the Auditors Want to Know) Measuring the Performance of a	147 .148 .149 .150 .151 .152 .153 .154 .155 .156 .158
Introduction The Vulnerability Management Plan The Six Stages of Vulnerability Management Stage One: Identify Stage Two: Assess Stage Three: Remediate Stage Four: Report Stage Five: Improve Stage Six: Monitor Governance (What the Auditors Want to Know) Measuring the Performance of a Vulnerability Management Program	147 .148 .149 .150 .151 .152 .153 .154 .155 .156 .158
Introduction The Vulnerability Management Plan The Six Stages of Vulnerability Management Stage One: Identify Stage Two: Assess Stage Three: Remediate Stage Four: Report Stage Five: Improve Stage Six: Monitor Governance (What the Auditors Want to Know) Measuring the Performance of a Vulnerability Management Program Common Problems with Vulnerability Management	147 .148 .149 .150 .151 .152 .153 .154 .155 .156 .158
Introduction The Vulnerability Management Plan The Six Stages of Vulnerability Management Stage One: Identify Stage Two: Assess Stage Three: Remediate Stage Four: Report Stage Five: Improve Stage Six: Monitor Governance (What the Auditors Want to Know) Measuring the Performance of a Vulnerability Management Program Common Problems with Vulnerability Management Summary	147 .148 .149 .150 .151 .152 .153 .154 .155 .156 .158 .160 .164 .166

171
172
172
174
177
177
178
178
179
179
180
180
180
.181
.181
.182
.182
.183
.186
.186
.188
189
.190
.190
.190
.195
.197
.199
.199
.202
.203
.204
204
.205
.207
.209

Configuration Management	.211
Logging and Reporting	.212
Change Control	.212
Summary	.216
Solutions Fast Track	.217
Frequently Asked Questions	.218
Chapter 10 Regulatory Compliance	221
Introduction	.222
Regulating Assessments and Pen Tests	.222
The Payment Card Industry (PCI) Standard	.223
The Health Insurance Portability and	
Accountability Act of 1996 (HIPAA)	.225
The Sarbanes-Oxley Act of 2002 (SOX)	.228
Compliance Recap	.230
Drafting an Information Security Program	.233
Summary	.239
Solutions Fast Track	.239
Frequently Asked Questions	.240
Chapter 11 Tying It All Together	243
Introduction	
A Vulnerability Management Methodology	.244
Step One: Know Your Assets	.245
What You Need to Do	.245
Why You Need to Do It	.246
How to Do It	.246
What Tools Exist to Help You Do It	.249
Step Two: Categorize Your Assets	.250
What You Need to Do	.250
Why You Need to Do It	.251
How to Do It	.252
What Tools Exist to Help You Do It	.252
Step Three: Create a Baseline Scan of Assets	.253
What You Need to Do	
Why You Need to Do It	.254
How to Do It	.254

What Tools Exist to Help You Do It	255
Step Four: Perform a Penetration Test on Certain Assets	256
What You Need to Do	256
Why You Need to Do It	257
How to Do It	
What Tools Exist to Help You Do It	.258
Step Five: Remediate Vulnerabilities and Risk	.259
What You Need to Do	.259
Why You Need to Do It	.259
How to Do It	.259
What Tools Exist to Help You Do It	.261
Step Six: Create a Vulnerability Assessment Schedule	.261
What You Need to Do	
Why You Need to Do It	.262
How to Do It	.262
Step Seven: Create a Patch	
and Change Management Process	.265
What You Need to Do	
Why You Need to Do It	
How to Do It	
What Tools Exist to Help You Do It	
Step Eight: Monitor for New Risks to Assets	
What You Need to Do	
Why You Need to Do It	
How to Do It	
What Tools Exist to Help You Do It	
Summary	.271
Appendix A Legal Principies for	
Information Security Evaluations	
Introduction	.274
Uncle Sam Wants You: How Your Company's Information	
Security Can Affect U.S. National Security (and Vice Versa)	
Legal Standards Relevant to Information Security	
Selected Federal Laws	
Gramm-Leach-Bliley Act	
Health Insurance Portability and Accountability Act	282
Sarbanes-Oxley	.283

Federal Information Security and Management Act	
FER PA and the TEACH Act	284
Electronic Communications Privacy	205
Act and Computer Fraud and Abuse Act	
State Laws	
Unauthorized Access	
Deceptive Trade Practices	
Enforcement Actions	
Three Fatal Fallacies	
The "Single Law" Fallacy	
The Private Entity Fallacy	
The "Pen Test Only" Fallacy	289
Do It Right or Bet the Company:	
Tools to Mitigate Legal Liability	
We Did our Best; What's the Problem?	
The Basis for Liability	
Negligence and the "Standard of Care"	
What Can Be Done?	
Understand your Legal Environment	293
Comprehensive and Ongoing Security	
Assessments, Evaluations, and Implementation	293
Use Contracts to Define Rights	
and Protect Information	294
Use Qualified Third-party Professionals	295
Making Sure Your Standards-of-Care	
Assessments Keep Up with Evolving Law	296
Plan for the Worst	297
Insurance	297
What to Cover in IEM Contracts64	
What, Who, When, Where, How, and How Much	299
What	299
Who	303
When	308
Where	308
How	309
How Much	310
Murphy's Law (When Something Goes Wrong)	312

Where the Rubber Meets the
Road: The LOA as Liability Protection
Beyond You and Your Customer
The First Thing We Do? Why You
Want Your Lawyers Involved From Start to Finish
Attorney-Client Privilege
Advice of Counsel Defense
Establishment and Enforcement of Rigorous
Assessment, Interview, and Report-Writing Standards322
Creating a Good Record for Future Litigation
Maximizing Ability to Defend Litigation323
Dealing with Regulators, Law Enforcement,
Intelligence, and Homeland Security Officials
The Ethics of Information Security Evaluation
Solutions Fast Track
Frequently Asked Questions
References
Appendix B Examples of
INFOSEC Tools by Baseline Activity
Index