


Digital Defense

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A Cybersecurity Primer

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This book is dedicated to the hardworking cyber security community that seeks to develop antivirus software, firewalls, and protective systems to defend against hackers and cybercriminals that would invade your digital world. We hope that this book can help to save would-be targets of cybercriminals and that the advice in this book will help to stem attacks by those that seek to use the Internet for ill-gotten gain and other nefarious purposes.

President Obama's Official Statement of February 13, 2015,
on Cybersecurity and its strategic importance to the United States:



America's economic prosperity, national security, and our individual liberties depend on our commitment to securing cyberspace and maintaining an open, interoperable, secure, and reliable Internet. Our critical infrastructure continues to be at risk from threats in cyberspace, and our economy is harmed by the theft of our intellectual property. Although the threats are serious and they constantly evolve, I believe that if we address them effectively, we can ensure that the Internet remains an engine for economic growth and a platform for the free exchange of ideas.

Statement given on the occasion of the U.S. Cyber Security Summit,
February 13, 2015

https://www.whitehouse.gov/.../president-obama-speaks-white-house-summit_on-cyberSecurity.htm

Preface

Cyber-attacks are increasing exponentially in the United States and around the world. Attacks in the United States are now averaging over 550,000 per week, or over 25,000,000 per year. Annual attacks on official U.S. government Internet sites have doubled from 31,000 in 2012 to over 60,000 in 2014. The increase of cyber-attacks is like an epidemic, and the threats to those that are linked to the Net via a desktop computer, a mobile phone, or a wireless local area network (LAN) in an office or router in their homes are of real concern.



In this short book there is straightforward and practical advice about how to defend yourself and your family against these often unprincipled and indeed criminal attacks. If you have an elderly mother or father or grandparent who uses the Internet you might buy this book for them. Or perhaps more

likely buy it and go over the most relevant parts with them and arrange with them to purchase at least basic firewall, antivirus, and identity theft protection and set them wise to key Internet scams to look out for.

We hope this book provides lots of useful advice and good counsel. But we believe it can be most useful in helping you to defend your children, your immediate family, and especially elderly family members against the increasingly sneaky trick of cyber criminals. It provides assessments of various cybersecurity offerings and tips on strategies about how to go about obtaining professional assistance from competent computer security firms. The small and usually reasonable annual fees these companies charge can provide you with cyber protection that amounts to far less than the losses you might incur if you do not take these precautions.

Key elements that you will find in this book include:

- A clear and understandable presentation (i.e., no “techno-speak”) of the various types of cyber threats that can now come to you via your Internet connections. These include, but are not limited to, viruses that can infect and disable your computer, malware that can allow your computer to send spam (unwanted e-mails out to thousands of others) for many nefarious purposes, and other types of computer trickery you should look out for. These computer tricks by “black hat hackers” (sometimes called “crackers”) keep growing. Computer criminals are getting sneakier. Such antics include what are called “phishing” and “pharming.” These seemingly legitimate messages are actually from computer criminals and might lead you to give away important passwords that could result in your financial accounts being drained of money, or perhaps worse.

We also provide advice about coping with “ransomware,” data bombs, and Trojans—all of which are dangers to watch out for in today’s world. We are moving into a new world sometimes called the “cyber-crime bazaar.” These are dark networks where a wide range of cybercriminal activities are conducted. Here you can buy stolen credit card numbers, buy kits to steal information off of wireless instant pay cards, or even find ways to disable alarms and other protective electronic systems. Keyless entry systems are just one of the new frontiers for cyber criminals.

- Practical advice about how to protect yourself and your family from cyber criminals that are variously called “black hat hackers,” “crackers,” or simply “hackers.” We emphasize that you might find this book useful to defend not only yourself but also your spouse, your children, and perhaps most of all elderly parents who are hip enough to go online, write and read e-mail, use a smart phone, and even send out texts and Tweets but may not be the most adept at defending themselves against cyber scammers.

- In today's world, where baby monitors and home security systems can be hacked, smart refrigerators and washing machines can send out spam, and cyber thieves with scanners can roam a neighborhood seeking out unprotected wireless routers so they can hack into bank savings and stock broker accounts, you need to be equipped to know how to protect you and your loved ones against those who would use the Internet and other electronic systems to extort money, empty accounts, capture key credit card or social security information, or steal identities.
- Information about the latest professional services that address cyber-bullying. This abuse of the Internet has become almost an epidemic in the last few years, with dire results such as public humiliation and even teen suicides. There are professional cyber-services one can obtain not only to protect yourself against cybercriminals but also to deal more effectively with cyber-bullying. These services allow those attacked by cyber-bullies to report such attacks and bring those that abuse the Internet to justice.
- An explanation of what is "identity theft" and why this is perhaps one of the worst things that can happen from a cyber-attack. This is because it could not only expose you to substantial financial loss and a very long hassle to correct the problem, but you could end up being charged with crimes that you did not commit because some criminal has assumed your identity.
- There is an up-to-date listing of various computer security services that can offer protective services against cyber criminals. These include providers of such services as "antiviruses," firewalls, password protection, and insurance against identity theft. Although not foolproof these services can go a long way to protect you against cyber-attackers. There is also information on more professional ways to track down those that would seek access to your wireless computer routers and wireless LANs without authorization.
- We provide you a rundown on why you need to be careful when you access the Net via "smartphones" and precautions that you should take when you sign up for automatic online "pay and go" or "tap and go" services such as "Apple Pay," "Blink," American Express "Express," etc.
- There are also some more detailed chapters about vital infrastructure. These chapters discuss other things that some users need to be concerned about. This is because the security of these "hidden digital systems and vital infrastructure" are now key to our daily lives. We depend on digital infrastructure that has widespread impact on lives. Thus we provide up-to-date information for those people who are dependent on satellite services to attain broadband access, GPS navigation, and other space-based services.

There is also a discussion of security issues involving the use of “the Cloud” because the government and more and more companies use the Cloud to store our vital information, process our tax returns, and keep track of our bank accounts.

- Finally we discuss briefly the specialized computer communications networks that control electrical grids, traffic signals, pipelines, water supplies, sewage treatment, and other urban infrastructure. These digital systems are known by the catchy name of “Supervisory Control and Data Acquisition (SCADA)” networks. Many might think that they do not need to know about such things, but it turns out that vital services you depend on from banks, local governments, the federal government, power companies, and more are potentially at risk with this type of cyber hazard. This means that you, too, are at risk. If you find these two chapters on vital infrastructure (i.e., satellites, “the Cloud” and “SCADA systems” in particular) turn out to be more detailed and involved than suit your taste, you can skip over them and proceed to the chapters about the future and the ten essential rules to follow.

Unfortunately there are others out there whose ambitions go beyond stealing money electronically or pulling pranks on people via the Internet. These are techno-terrorists that are seeking ways to use the Internet, information networks, remote and automated control systems, satellite links, or other electronic means to invade key governmental or military data banks. These techno-terrorists are conspiring to launch cyber-attacks against entire communities or even nations. Efforts to stop these sophisticated cyber-attackers, located in countries such as North Korea or within such terrorist organizations as ISIS, will dominate defense efforts more and more in future years.

One of the many problems with cybersecurity is that there are hundreds of terms that computer geeks use in this fairly technical field. To assist you there is a fairly detailed list of terms provided in the glossary to help explain the meaning of acronyms and to explain terms such as “whale phishing” and “near field communications” that are used in the new “tap-and-pay” systems, etc. Our goal, however, has been to use as few of these “techno-speak” terms as possible.

At the end of the book are some appendices that spell out the vital cybersecurity programs that are now being implemented in the United States and abroad for those that would like to know what their governments are doing to protect them against both cyber criminals and, even worse, techno-terrorists that attempt to carry out devastating cyber-attacks.

We have tried to be as comprehensive as possible in addressing the concerns that an individual or small business might have regarding cybersecurity and attacks that cyber-thugs might launch against you or your family. We have tried to explain basic cyber-risks and protective strategies without becoming enmeshed in techno-speak and gobbledegook terms that get in the way of a clear understanding of what the problems and solutions are. We hope you enjoy *Digital Defense*, which is designed to become your basic guide to cybersecurity. This is a book devoted to protecting you, your family, and especially seniors against those that abuse the Internet and digital technology.

Washington, DC, USA
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Contents

1	What Is at Stake? What Should You Do? Why Should You Care?	1
	Houston, Texas, and the “Hacked Baby Cam” in the Nursery	1
	The Sum of 22,000 lb Transferred from Elderly Mother’s Bank Account in London, England	2
	Couple Sentenced for False Tax Refund Conspiracy	3
	Teens and Cyber Identity Theft	3
	Kaitlin Jackson’s Campaign Against Cyberbullying Trolls	4
	Hacking into Aircraft Communications and IT Wireless Communications Networks	5
	Level One Attacks	6
	Level Two Attacks	7
	Level Three Attacks	7
	Level One Threats to Be Taken Seriously	8
	Handle with Care!	8
	CryptoWall 2.0	9
	The Trade in Swipeable Credit Card Information	9
	The Cyber Criminal Bazaar	11
	Cyber Thieves and Medical Records	14
	Nigerian Prince Come-Ons and the Latest in Targeted Online Scams	14
	Protecting Against Personal Cyber Attacks	15
	Phishing and Pharming	15
	Level Two Cyber-Attacks	16
	Trojans on the Attack Against Banks	16
	Insurance Collapse Due to Massive Cyber Attacks	17
	The “Internet of Things”: A World in Which Cars, Appliances, and Almost Everything Is Connected to the Net	18
	Level Three Attacks	19
	GPS Resilience and Vulnerability	19
	Attack on Water and Sewage Systems via SCADA Systems	20
	Transit Systems and Aircraft Safety at Risk	21
	A Recap of Why You Should Care	21
	References	23

2	Where to Go for Assistance	25
	Help Available	25
	Electronic Filters That Protect Against Malware Intrusions	27
	Recommended Websites	29
	Identity Theft Protection	30
	Firewalls and Backup Memory	34
	Common Features That Personal Firewall Can Offer.....	35
	Limitations of Firewalls	35
	Insurance Offerings	37
	What to Do	38
	And Now How to Protect Your Family Against Cyberbullies, Pornography, Online Hate Messages, and Other Cyber-Related Maladies	39
	What to Do About Protecting Your Family's Computers from Cyber Criminals, Stalkers and Bullies	41
	What to Do About Pornographic Sites and Sexting	44
	Protective Strategies for the Over-50 Crowd	44
	Conclusions.....	46
	References.....	47
3	Is Anyone Looking Out for You? Your Government? Businesses Where You Trade? Your Neighbor? or Just Yourself?	49
	Governmental Issues: The "Snowden Factor"	52
	Corporate and Industrial Issues.....	58
	Individual Transgressions and Cyber-World Concerns	60
	Conclusions.....	62
	References.....	65
4	Ten Key Things to Protect	67
	Introduction	67
	The Top Ten Things for You and Your Family to Protect Against and How.....	68
	#1. Protect Stocks, Bonds, and Retirement Accounts	69
	#2. Protect Your Bank Account and Credit Card Account Records	71
	#3. Protect Your Social Security, Medicare/Medicaid Accounts and Medical Records	72
	#4. Protect Desktop Computers, Wi-Fi, and Computer Routing Systems (LANS and WANS).....	73
	#5. Protect Personal Cell Phones/Smart Phones.....	74
	#6. Upgrade Cyber Security Systems for Vital Infrastructure.....	75
	#7. Protect Big Data and Social Media: And At Least Some of Your Privacy....	76
	#8. Don't Put All of Your Eggs in One Basket.....	77
	#9. Protect Yourself by Doing Audits	78
	#10. Protect Your Personal Things, Your Family, and Your Business Interests, Including Your Last Will and Testament, Plus Donations and Legacy.....	78
	Conclusions.....	79
	References.....	80

5	Cybersecurity for Smart Phones, Mobile Apps, and “The Cloud”	83
	Introduction	83
	The Dangers of Wi-Fi Access to the Internet	85
	Mobile Applications on Smart Phones.....	86
	Mobile Phone Security and Access.....	87
	Making Your Smart Phone More Secure.....	88
	Cybersecurity and Banking Apps.....	89
	The Cloud	92
	Evaluating Personal Cloud Services (Fig. 5.3).....	92
	Conclusions.....	100
	References.....	100
6	Protecting Vital Cyber Infrastructure	103
	Introduction	103
	SCADA Networks in Our Lives that We Never See.....	105
	SCADA Systems Security in a Community.....	107
	Satellite Networks and Cyber Risks	108
	Satellites and Cybersecurity	109
	Satellite Technology and Systems.....	110
	Application Satellites with Cybersecurity Implications.....	112
	Fixed Satellite Systems and High Throughput Satellites.....	117
	Mobile Satellite Systems	118
	Conventional Mobile Satellite Communications.....	119
	Mobile Satellite Systems with ATC Ancillary Terrestrial Component.....	121
	Conclusions.....	123
	References.....	124
7	Who Will Control the Future, Black Hat Hackers or the Hacked?	127
	The Viral Cyber World	127
	How Do We Protect Ourselves from Cyber-Attacks Going Forward?.....	128
	Coping with Current and Future Cyber Threats.....	131
	Nearer Term Threats: Computer Fraud, Wi-Fi, Wireless LANs, and the Cloud.....	132
	Wireless Local Area Networks (LANs) and Satellite Networking	133
	Security Flaws in The Cloud.....	134
	Best Practices for Companies in the Cloud.....	134
	Cyber Protection of Vital Infrastructure Under U.S. Government and Corporate Management	135
	The Smart Grid.....	138
	Vulnerable Apps on Smart Phones and Desktop Computers.....	138
	The Internet of Things	140
	Hololens and Cybersecurity.....	141
	Conclusions.....	142
	Post-conclusions: Cyber Opportunities vs. Cyber Threats to Our Lives?.....	143
	References.....	144

- 8 Ten Essential Rules for Your Cyber Defense 145**
 - #1. Protect Your Personal Records and Your Passwords 145
 - #2. Obtain a Secure Place to Store Vital Information 147
 - #3. Shred All Financial, Medical, and Other Personal Information
that You Discard 147
 - #4. Get AntiVirus Software Protection 148
 - #5. Prevent Your Identity from Being Stolen 149
 - #6. Obtain at Least the Basic Personal Firewall Protection 151
 - #7. Recognize Warning Signs and Respond Quickly to Threats 151
 - #8. Consider Getting Comprehensive Insurance Against Financial
and Cyber-Loss 152
 - #9. Support the Adoption of Stricter Governmental Legislation
and Standards for Cybersecurity 153
 - #10. Take Common Sense Steps to Guard Against Cyber-Attacks 154
 - References 155
- Appendix A Glossary of Definitions and Acronyms 157**
- Appendix B Current U. S. Priorities on Cybersecurity 175**
- Appendix C The U.S. Comprehensive
National Cybersecurity Initiative (CNCI) 179**
- Appendix D Cybersecurity Activities
and Policies Around the World 189**
- About the Authors 201**
- Index 207**