Windows Forensic Analysis Toolkit Advanced Analysis Techniques For Windows 8

Malware Forensics: Investigating and Analyzing Malicious Code covers the complete process of responding to a malicious code incident. Written by authors who have investigated and prosecuted federal malware cases, this book deals with the emerging and evolving field of live forensics, where investigators examine a computer system to collect and preserve critical live data that may be lost if the system is shut down. Unlike other forensic texts that discuss live forensics on a particular operating system, or in a generic context, this book emphasizes a live forensics and evidence collection methodology on both Windows and Linux operating systems in the context of identifying and capturing malicious code and evidence of its effect on the compromised system. It is the first book detailing how to perform live forensic techniques on malicious code. The book gives deep coverage on the tools and techniques of conducting runtime behavioral malware analysis (such as file, registry, network and port monitoring) and static code analysis (such as file identification and profiling, strings discovery, armoring/packing detection, disassembling, debugging), and more. It explores over 150 different tools for malware incident response and analysis, including forensic tools for preserving and analyzing computer memory. Readers from all educational and technical backgrounds will benefit from the clear and concise explanations of the applicable legal case law and statutes covered in every chapter. In addition to the technical topics discussed, this book also offers critical legal considerations addressing the legal ramifications and requirements governing the subject matter. This book is intended for system administrators, information security professionals, network personnel, forensic examiners, attorneys, and law enforcement working with the inner-workings of computer memory and malicious code. * Winner of Best Book Bejtlich read in 2008! * http://taosecurity.blogspot.com/2008/12/best-book-bejtlich-read-in-2008.html * Authors have investigated and prosecuted federal malware cases, which allows them to provide unparalleled insight to the reader. * First book to detail how to perform "live forensic" techniques on malicous code. * In addition to the technical topics discussed, this book also offers critical legal considerations addressing the legal ramifications and requirements governing the subject matter

Windows Registry Forensics provides the background of the Windows Registry to help develop an understanding of the binary structure of Registry hive files. Approaches to live response and analysis are included, and tools and techniques for postmortem analysis are discussed at length. Tools and techniques are presented that take the student and analyst beyond the current use of viewers and into real analysis of data contained in the Registry, demonstrating the forensic value of the Registry. Named a 2011 Best Digital Forensics Book by InfoSec Reviews, this book is packed with real-world examples using freely available open source tools. It also includes case studies and a CD containing code and author-created tools discussed in the book. This book will appeal to computer forensic and incident response professionals, including federal government and commercial/private sector contractors, consultants, etc. Named a 2011 Best Digital Forensics Book by InfoSec Reviews Packed with real-world examples using freely available open source tools Deep explanation and understanding of the Windows Registry – the most difficult part of Windows to analyze forensically Includes a CD containing code and author-created tools discussed in the book

Windows Forensic Analysis Toolkit: Advanced Analysis Techniques for Windows 7 provides an overview of live and postmortem response collection and analysis methodologies for Windows 7. It considers the core investigative and analysis concepts that are critical to the work of professionals within the digital forensic analysis community, as well as the need for immediate response once an incident has been identified. Organized into eight chapters, the book discusses Volume Shadow Copies (VSCs) in the context of digital forensics and explains how analysts can access the wealth of information available in VSCs without interacting with the live system or purchasing expensive solutions. It also describes files and data structures that are new to Windows 7 (or Vista), Windows Registry Forensics, how the presence of malware within an image acquired from a Windows system can be detected, the idea of timeline analysis as applied to digital forensic analysis, and concepts and techniques that are often associated with dynamic malware analysis. Also included are several tools written in the Perl scripting language, accompanied by Windows executables. This book will prove useful to digital forensic analysts, incident responders, law enforcement officers, students, researchers, system administrators, hobbyists, or anyone with an interest in digital forensic analysis of Windows 7 systems. Timely 3e of a Syngress digital forensic bestseller Updated to cover Windows 7 systems, the newest Windows version New online companion website houses checklists, cheat sheets, free tools, and demos

Incident response is critical for the active defense of any network, and incident responders need up-to-date, immediately applicable techniques with which to engage the adversary. Applied Incident Response details effective ways to respond to advanced attacks against local and remote network resources, providing proven response techniques and a framework through which to apply them. As a starting point for new incident handlers, or as a technical reference for hardened IR veterans, this book details the latest techniques for responding to threats against your network, including: Preparing your environment for effective incident response Leveraging MITRE ATT&CK and threat intelligence for active network defense Local and remote triage of systems using PowerShell, WMIC, and open-source tools Acquiring RAM and disk images locally and remotely Analyzing RAM with Volatility and Rekall Deep-dive forensic analysis of system drives using open-source or commercial tools Leveraging Security Onion and Elastic Stack for network security monitoring Techniques for log analysis and aggregating high-value logs Static and dynamic analysis of malware with YARA rules, FLARE VM, and Cuckoo Sandbox Detecting and responding to lateral movement techniques, including pass-the-hash, pass-the-ticket, Kerberoasting, malicious use of PowerShell, and many more Effective threat hunting techniques Adversary emulation with Atomic Red Team Improving preventive and detective controls

Dissecting the dark side of the Internet with its infectious worms, botnets, rootkits, and Trojan horse programs (known as malware) is a treaterous condition for any forensic investigator or analyst. Written by information security experts with real-world investigative experience, Malware Forensics Field Guide for Windows Systems is a "tool" with checklists for specific tasks, case studies of difficult situations, and expert analyst tips. *A condensed hand-held guide complete with on-the-job tasks and checklists *Specific for Windows-based systems, the largest running OS in the world *Authors are world-renowned leaders in investigating and analyzing malicious code

Memory forensics provides cutting edge technology to help investigate digital attacks Memory forensics is the art of analyzing computer memory (RAM) to solve digital crimes. As a follow-up to the best seller Malware Analyst's Cookbook, experts in the fields of malware, security, and digital forensics bring you a step-by-step guide to memory forensics—now the most sought after skill in the digital forensics and incident response fields. Beginning with introductory concepts and moving toward the advanced, The Art of Memory Forensics: Detecting Malware and Threats

in Windows, Linux, and Mac Memory is based on a five day training course that the authors have presented to hundreds of students. It is the only book on the market that focuses exclusively on memory forensics and how to deploy such techniques properly. Discover memory forensics techniques: How volatile memory analysis improves digital investigations Proper investigative steps for detecting stealth malware and advanced threats How to use free, open source tools for conducting thorough memory forensics Ways to acquire memory from suspect systems in a forensically sound manner The next era of malware and security breaches are more sophisticated and targeted, and the volatile memory of a computer is often overlooked or destroyed as part of the incident response process. The Art of Memory Forensics explains the latest technological innovations in digital forensics to help bridge this gap. It covers the most popular and recently released versions of Windows, Linux, and Mac, including both the 32 and 64-bit editions.

Harlan Carvey has updated Windows Forensic Analysis Toolkit, now in its fourth edition, to cover Windows 8 systems. The primary focus of this edition is on analyzing Windows 8 systems and processes using free and open-source tools. The book covers live response, file analysis, malware detection, timeline, and much more. Harlan Carvey presents real-life experiences from the trenches, making the material realistic and showing the why behind the how. The companion and toolkit materials are hosted online. This material consists of electronic printable checklists, cheat sheets, free custom tools, and walk-through demos. This edition complements Windows Forensic Analysis Toolkit, Second Edition, which focuses primarily on XP, and Windows Forensic Analysis Toolkit, Third Edition, which focuses primarily on Windows 7. This new fourth edition provides expanded coverage of many topics beyond Windows 8 as well, including new cradle-to-grave case examples, USB device analysis, hacking and intrusion cases, and "how would I do this" from Harlan's personal case files and questions he has received from readers. The fourth edition also includes an all-new chapter on reporting. Complete coverage and examples of Windows 8 systems Contains lessons from the field, case studies, and war stories Companion online toolkit material, including electronic printable checklists, cheat sheets, custom tools, and walk-throughs

The book is an easy-to-follow guide with clear instructions on various mobile forensic techniques. The chapters and the topics within are structured for a smooth learning curve, which will swiftly empower you to master mobile forensics. If you are a budding forensic analyst, consultant, engineer, or a forensic professional wanting to expand your skillset, this is the book for you. The book will also be beneficial to those with an interest in mobile forensics or wanting to find data lost on mobile devices. It will be helpful to be familiar with forensics in general but no prior experience is required to follow this book.

Leverage the power of digital forensics for Windows systems About This Book Build your own lab environment to analyze forensic data and practice techniques. This book offers meticulous coverage with an example-driven approach and helps you build the key skills of performing forensics on Windows-based systems using digital artifacts. It uses specific open source and Linux-based tools so you can become proficient at analyzing forensic data and upgrade your existing knowledge. Who This Book Is For This book targets forensic analysts and professionals who would like to develop skills in digital forensic analysis for the Windows platform. You will acquire proficiency, knowledge, and core skills to undertake forensic analysis of digital data. Prior experience of information security and forensic analysis would be helpful. You will gain knowledge and an understanding of performing forensic analysis with tools especially built for the Windows platform. What You Will Learn Perform live analysis on victim or suspect Windows systems locally or remotely Understand the different natures and acquisition techniques of volatile and non-volatile data. Create a timeline of all the system actions to restore the history of an incident. Recover and analyze data from FAT and NTFS file systems. Make use of various tools to perform registry analysis. Track a system user's browser and e-mail activities to prove or refute some hypotheses. Get to know how to dump and analyze computer memory. In Detail Over the last few years, the wave of the cybercrime has risen rapidly. We have witnessed many major attacks on the governmental, military, financial, and media sectors. Tracking all these attacks and crimes requires a deep understanding of operating system operations, how to extract evident data from digital evidence, and the best usage of the digital forensic tools and techniques. Regardless of your level of experience in the field of information security in general, this book will fully introduce you to digital forensics. It will provide you with the knowledge needed to assemble different types of evidence effectively, and walk you through the various stages of the analysis process. We start by discussing the principles of the digital forensics process and move on to show you the approaches that are used to conduct analysis. We will then study various tools to perform live analysis, and go through different techniques to analyze volatile and non-volatile data. Style and approach This is a step-by-step guide that delivers knowledge about different Windows artifacts. Each topic is explained sequentially, including artifact analysis using different tools and techniques. These techniques make use of the evidence extracted from infected machines, and are accompanied by real-life examples.

Metasploit Toolkit for Penetration Testing, Exploit Development, and Vulnerability Research is the first book available for the Metasploit Framework (MSF), which is the attack platform of choice for one of the fastest growing careers in IT security: Penetration Testing. The book will provide professional penetration testers and security researchers with a fully integrated suite of tools for discovering, running, and testing exploit code. This book discusses how to use the Metasploit Framework (MSF) as an exploitation platform. The book begins with a detailed discussion of the three MSF interfaces: msfweb, msfconsole, and msfcli .This chapter demonstrates all of the features offered by the MSF as an exploitation platform. With a solid understanding of MSF’s capabilities, the book then details techniques for dramatically reducing the amount of time required for developing functional exploits. By working through a real-world vulnerabilities against popular closed source applications, the reader will learn how to use the tools and MSF to quickly build reliable attacks as standalone exploits. The section will also explain how to integrate an exploit directly into the Metasploit Framework by providing a line-by-line analysis of an integrated exploit module. Details as to how the Metasploit engine drives the behind-the-scenes exploitation process will be covered, and along the way the reader will come to understand the advantages of exploitation frameworks. The final section of the book examines the Meterpreter payload system and teaches readers to develop completely new extensions that will integrate fluidly with the Metasploit Framework. A November 2004 survey conducted by "CSO Magazine" stated that 42% of chief security officers considered penetration testing to be a security priority for their organizations The Metasploit Framework is the most popular open source exploit platform, and there are no competing books

This book contains a selection of thoroughly refereed and revised papers from the Second International ICST Conference on Digital Forensics and Cyber Crime, ICDF2C 2010, held October 4-6, 2010 in Abu Dhabi, United Arab Emirates. The field of digital forensics is becoming increasingly important for law enforcement, network security, and information assurance. It is a

multidisciplinary area that encompasses a number of fields, including law, computer science, finance, networking, data mining, and criminal justice. The 14 papers in this volume describe the various applications of this technology and cover a wide range of topics including law enforcement, disaster recovery, accounting frauds, homeland security, and information warfare.

The evidence is in--to solve Windows crime, you need Windows tools An arcane pursuit a decade ago, forensic science today is a household term. And while the computer forensic analyst may not lead as exciting a life as TV's CSIs do, he or she relies just as heavily on scientific principles and just as surely solves crime. Whether you are contemplating a career in this growing field or are already an analyst in a Unix/Linux environment, this book prepares you to combat computer crime in the Windows world. Here are the tools to help you recover sabotaged files, track down the source of threatening e-mails, investigate industrial espionage, and expose computer criminals. * Identify evidence of fraud, electronic theft, and employee Internet abuse * Investigate crime related to instant messaging, Lotus Notes(r), and increasingly popular browsers such as Firefox(r) * Learn what it takes to become a computer forensics analyst * Take advantage of sample forms and layouts as well as case studies * Protect the integrity of evidence * Compile a forensic response toolkit * Assess and analyze damage from computer crime and process the crime scene * Develop a structure for effectively conducting investigations * Discover how to locate evidence in the Windows Registry

Windows Registry Forensics: Advanced Digital Forensic Analysis of the Windows Registry, Second Edition, provides the most in-depth guide to forensic investigations involving Windows Registry. This book is one-of-a-kind, giving the background of the Registry to help users develop an understanding of the structure of registry hive files, as well as information stored within keys and values that can have a significant impact on forensic investigations. Tools and techniques for post mortem analysis are discussed at length to take users beyond the current use of viewers and into real analysis of data contained in the Registry. This second edition continues a ground-up approach to understanding so that the treasure trove of the Registry can be mined on a regular and continuing basis. Named a Best Digital Forensics Book by InfoSec Reviews Packed with real-world examples using freely available open source tools Provides a deep explanation and understanding of the Windows Registry—perhaps the least understood and employed source of information within Windows systems Includes a companion website that contains the code and author-created tools discussed in the book Features updated, current tools and techniques Contains completely updated content throughout, with all new coverage of the latest versions of Windows

Windows Forensic Analysis Toolkit: Advanced Analysis Techniques for Windows 7 provides an overview of live and postmortem response collection and analysis methodologies for Windows 7. It considers the core investigative and analysis concepts that are critical to the work of professionals within the digital forensic analysis community, as well as the need for immediate response once an incident has been identified. Organized into eight chapters, the book discusses Volume Shadow Copies (VSCs) in the context of digital forensics and explains how analysts can access the wealth of information available in VSCs without interacting with the live system or purchasing expensive solutions. It also describes files and data structures that are new to Windows 7 (or Vista), Windows Registry Forensics, how the presence of malware within an image acquired from a Windows system can be detected, the idea of timeline analysis as applied to digital forensic analysis, and concepts and techniques that are often associated with dynamic malware analysis. Also included are several tools written in the Perl scripting language, accompanied by Windows executables. This book will prove useful to digital forensic analysts, incident responders, law enforcement officers, students, researchers, system administrators, hobbyists, or anyone with an interest in digital forensic analysis of Windows 7 systems. Timely 3e of a Syngress digital forensic bestseller Updated to cover Windows 7 systems, the newest Windows version New online companion website houses checklists, cheat sheets, free tools, and demos.

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Digital forensics deals with the acquisition, preservation, examination, analysis and presentation of electronic evidence. Networked computing, wireless communications and portable electronic devices have expanded the role of digital forensics beyond traditional computer crime investigations. Practically every crime now involves some aspect of digital evidence; digital forensics provides the techniques and tools to articulate this evidence. Digital forensics also has myriad intelligence applications. Furthermore, it has a vital role in information assurance - investigations of security breaches yield valuable information that can be used to design more secure systems. Advances in Digital Forensics V describes original research results and innovative applications in the discipline of digital forensics. In addition, it highlights some of the major technical and legal issues related to digital evidence and electronic crime investigations. The areas of coverage include: themes and issues, forensic techniques, integrity and privacy, network forensics, forensic computing, investigative techniques, legal issues and evidence management. This book is the fifth volume in the annual series produced by the International Federation for Information Processing (IFIP) Working Group 11.9 on Digital Forensics, an international community of scientists, engineers and practitioners dedicated to advancing the state of the art of research and practice in digital forensics. The book contains a selection of twenty-three edited papers from the Fifth Annual IFIP WG 11.9 International Conference on Digital Forensics, held at the National Center for Forensic Science, Orlando, Florida, USA in the spring of 2009. Advances in Digital Forensics V is an important resource for researchers, faculty members and graduate students, as well as for practitioners and individuals engaged in research and development efforts for the law enforcement and intelligence communities.

Windows Forensics is the most comprehensive and up-to-date resource for those wishing to leverage the power of Linux and free software in order to quickly and efficiently perform forensics on Windows systems. It is also a great asset for anyone that would like to better understand Windows internals. Windows Forensics will guide you step by step through the process of investigating a computer running Windows. Whatever the reason for performing forensics on a Windows system, be it incident response, a criminal investigation, suspected data ex-filtration, or data recovery, this book will tell you what you need to know in order to perform the vast majority of investigations. All of the tools discussed in this book are free and most are also open source. Dr. Philip Polstra shows how to leverage numerous tools such as Python, shell scripting, and MySQL to quickly, easily, and accurately analyze Windows systems. While readers will have a strong grasp of Python and shell scripting by the time they complete this book, no prior knowledge of either of these scripting languages is assumed. Windows Forensics begins by showing you how to determine if there was an incident with minimally invasive techniques. Once it appears likely that an incident has occurred, Dr. Polstra shows you how to collect data from

a live system before shutting it down for the creation of filesystem images. Windows Forensics contains extensive coverage of Windows FAT and NTFS filesystems. A large collection of Python and shell scripts for creating, mounting, and analyzing filesystem images are presented in this book. The treasure trove of data found in the Windows Registry and other artifacts are discussed in detail. Dr. Polstra introduces readers to the exciting new field of memory analysis using the Volatility framework. Discussion of malware analysis rounds out the book. Book Highlights 554 pages in large, easy-to-read 8.5 x 11 inch format Over 11,000 lines of Python scripts with explanations Over 500 lines of shell and command scripts with explanations A 96 page chapter covering the FAT filesystem in detail A 164 page chapter on NTFS filesystems Multiple scenarios described in detail with images available from the book website All scripts and other support files are available from the book website

Essay from the year 2015 in the subject Computer Science - Miscellaneous, UNITEC New Zealand, language: English, abstract: Nowadays the use of computers is increasing more and more. This has allowed the development of the internet. In turn, the Internet has brought many benefits, but the internet has also contributed to the rise of cyber-crime. So, with the rise of cybercrime, it has become critical to increase and develop computer systems security. Each time, the techniques used by cybercriminals are more sophisticated, making it more difficult to protect corporate networks. Because of this, the computer security of these companies has been violated, and it is here at this point when digital analysis forensic is needed to discover cybercriminals. So, with the rise of cybercrime, digital forensics is increasingly gaining importance in the area of information technology. For this reason, when a crime is done, the crime information is stored digitally. Therefore, it must use appropriate mechanisms for the collection, preservation, protection, analysis and presentation of digital evidence stored in electronic devices. It is here that the need arises for digital forensics. In this report, I am going to explain what digital forensics is. Also, I will describe some forensic software and hardware and the importance of suitable forensic labs. So, let’s start.

Maximize the power of Windows Forensics to perform highly effective forensic investigations About This Book Prepare and perform investigations using powerful tools for Windows, Collect and validate evidence from suspects and computers and uncover clues that are otherwise difficult Packed with powerful recipes to perform highly effective field investigations Who This Book Is For If you are a forensic analyst or incident response professional who wants to perform computer forensics investigations for the Windows platform and expand your took kit, then this book is for you. What You Will Learn Understand the challenges of acquiring evidence from Windows systems and overcome them Acquire and analyze Windows memory and drive data with modern forensic tools. Extract and analyze data from Windows file systems, shadow copies and the registry Understand the main Windows system artifacts and learn how to parse data from them using forensic tools See a forensic analysis of common web browsers, mailboxes, and instant messenger services Discover how Windows 10 differs from previous versions and how to overcome the specific challenges it presents Create a graphical timeline and visualize data, which can then be incorporated into the final report Troubleshoot issues that arise while performing Windows forensics In Detail Windows Forensics Cookbook provides recipes to overcome forensic challenges and helps you carry out effective investigations easily on a Windows platform. You will begin with a refresher on digital forensics and evidence acquisition, which will help you to understand the challenges faced while acquiring evidence from Windows systems. Next you will learn to acquire Windows memory data and analyze Windows systems with modern forensic tools. We also cover some more in-depth elements of forensic analysis, such as how to analyze data from Windows system artifacts, parse data from the most commonly-used web browsers and email services, and effectively report on digital forensic investigations. You will see how Windows 10 is different from previous versions and how you can overcome the specific challenges it brings. Finally, you will learn to troubleshoot issues that arise while performing digital forensic investigations. By the end of the book, you will be able to carry out forensics investigations efficiently. Style and approach This practical guide filled with hands-on, actionable recipes to detect, capture, and recover digital artifacts and deliver impeccable forensic outcomes.

Placing the Suspect Behind the Keyboard is the definitive book on conducting a complete investigation of a cybercrime using digital forensics techniques as well as physical investigative procedures. This book merges a digital analysis examiner's work with the work of a case investigator in order to build a solid case to identify and prosecute cybercriminals. Brett Shavers links traditional investigative techniques with high tech crime analysis in a manner that not only determines elements of crimes, but also places the suspect at the keyboard. This book is a first in combining investigative strategies of digital forensics analysis processes alongside physical investigative techniques in which the reader will gain a holistic approach to their current and future cybercrime investigations. Learn the tools and investigative principles of both physical and digital cybercrime investigations—and how they fit together to build a solid and complete case Master the techniques of conducting a holistic investigation that combines both digital and physical evidence to track down the "suspect behind the keyboard" The only book to combine physical and digital investigative techniques

Develop the capacity to dig deeper into mobile device data acquisition About This Book A mastering guide to help you overcome the roadblocks you face when dealing with mobile forensics Excel at the art of extracting data, recovering deleted data, bypassing screen locks, and much more Get best practices to how to collect and analyze mobile device data and accurately document your investigations Who This Book Is For The book is for mobile forensics professionals who have experience in handling forensic tools and methods. This book is designed for skilled digital forensic examiners, mobile forensic investigators, and law enforcement officers. What You Will Learn Understand the mobile forensics process model and get guidelines on mobile device forensics Acquire in-depth knowledge about smartphone acquisition and acquisition methods Gain a solid understanding of the architecture of operating systems, file formats, and mobile phone internal memory Explore the topics of of mobile security, data leak, and evidence recovery Dive into advanced topics such as GPS analysis, file carving, encryption, encoding, unpacking, and decompiling mobile application processes In Detail Mobile forensics presents a real challenge to the forensic community due to the fast and unstoppable changes in technology. This book aims to provide the forensic community an in-depth insight into

mobile forensic techniques when it comes to deal with recent smartphones operating systems Starting with a brief overview of forensic strategies and investigation procedures, you will understand the concepts of file carving, GPS analysis, and string analyzing. You will also see the difference between encryption, encoding, and hashing methods and get to grips with the fundamentals of reverse code engineering. Next, the book will walk you through the iOS, Android and Windows Phone architectures and filesystem, followed by showing you various forensic approaches and data gathering techniques. You will also explore advanced forensic techniques and find out how to deal with third-applications using case studies. The book will help you master data acquisition on Windows Phone 8. By the end of this book, you will be acquainted with best practices and the different models used in mobile forensics. Style and approach The book is a comprehensive guide that will help the IT forensics community to go more in-depth into the investigation process and mobile devices take-over.

"When I sat down to update the material for this edition, I wanted to not only include new information that I'd found or developed since the third edition was published, but I also wanted to try to include as much information as possible regarding Windows 8 and 8.1. With Windows 8.1 becoming available while I was updating the book, the inevitable questions were being asked, and invariably it won't be long before we start seeing the systems appear on analyst's workbenches. As such, I've tried to provide as much information as I could with respect to newer versions of Windows (i.e., 8 and 8.1), either by writing it directly into the book or linking to the sources of information on the Internet, when attempting to summarize it would simply not do the content justice. Keep in mind, however, that new information is being discovered and developed all the time, and at some point, I needed to stop writing and submit the book for final review and publishing. I'm sure that even more information will become available during the time between when the book goes to the printer, and when it actually comes out on the shelves at bookstores"--

Operating System Forensics is the first book to cover all three critical operating systems for digital forensic investigations in one comprehensive reference. Users will learn how to conduct successful digital forensic examinations in Windows, Linux, and Mac OS, the methodologies used, key technical concepts, and the tools needed to perform examinations. Mobile operating systems such as Android, iOS, Windows, and Blackberry are also covered, providing everything practitioners need to conduct a forensic investigation of the most commonly used operating systems, including technical details of how each operating system works and how to find artifacts. This book walks you through the critical components of investigation and operating system functionality, including file systems, data recovery, memory forensics, system configuration, Internet access, cloud computing, tracking artifacts, executable layouts, malware, and log files. You'll find coverage of key technical topics like Windows Registry, /etc directory, Web browers caches, Mbox, PST files, GPS data, ELF, and more. Hands-on exercises in each chapter drive home the concepts covered in the book. You'll get everything you need for a successful forensics examination, including incident response tactics and legal requirements. Operating System Forensics is the only place you'll find all this covered in one book. Covers digital forensic investigations of the three major operating systems, including Windows, Linux, and Mac OS Presents the technical details of each operating system, allowing users to find artifacts that might be missed using automated tools Hands-on exercises drive home key concepts covered in the book. Includes discussions of cloud, Internet, and major mobile operating systems such as Android and iOS

Digital Forensics with Open Source Tools is the definitive book on investigating and analyzing computer systems and media using open source tools. The book is a technical procedural guide, and explains the use of open source tools on Mac, Linux and Windows systems as a platform for performing computer forensics. Both well-known and novel forensic methods are demonstrated using command-line and graphical open source computer forensic tools for examining a wide range of target systems and artifacts. Written by world-renowned forensic practitioners, this book uses the most current examination and analysis techniques in the field. It consists of 9 chapters that cover a range of topics such as the open source examination platform; disk and file system analysis; Windows systems and artifacts; Linux systems and artifacts; Mac OS X systems and artifacts; Internet artifacts; and automating analysis and extending capabilities. The book lends itself to use by students and those entering the field who do not have means to purchase new tools for different investigations. This book will appeal to forensic practitioners from areas including incident response teams and computer forensic investigators; forensic technicians from legal, audit, and consulting firms; and law enforcement agencies. Written by world-renowned forensic practitioners Details core concepts and techniques of forensic file system analysis Covers analysis of artifacts from the Windows, Mac, and Linux operating systems

A practical guide to deploying digital forensic techniques in response to cyber security incidents About This Book Learn incident response fundamentals and create an effective incident response framework Master forensics investigation utilizing digital investigative techniques Contains real-life scenarios that effectively use threat intelligence and modeling techniques Who This Book Is For This book is targeted at Information Security professionals, forensics practitioners, and students with knowledge and experience in the use of software applications and basic command-line experience. It will also help professionals who are new to the incident response/digital forensics role within their organization. What You Will Learn Create and deploy incident response capabilities within your organization Build a solid foundation for acquiring and handling suitable evidence for later analysis Analyze collected evidence and determine the root cause of a security incident Learn to integrate digital forensic techniques and procedures into the overall incident response process Integrate threat intelligence in digital evidence analysis Prepare written documentation for use internally or with external parties such as regulators or law enforcement agencies In Detail Digital Forensics and Incident Response will guide you through the entire spectrum of tasks associated with incident response, starting with preparatory activities associated with creating an incident response plan and creating a digital forensics capability within your own organization. You will then begin a detailed

examination of digital forensic techniques including acquiring evidence, examining volatile memory, hard drive assessment, and network-based evidence. You will also explore the role that threat intelligence plays in the incident response process. Finally, a detailed section on preparing reports will help you prepare a written report for use either internally or in a courtroom. By the end of the book, you will have mastered forensic techniques and incident response and you will have a solid foundation on which to increase your ability to investigate such incidents in your organization. Style and approach The book covers practical scenarios and examples in an enterprise setting to give you an understanding of how digital forensics integrates with the overall response to cyber security incidents. You will also learn the proper use of tools and techniques to investigate common cyber security incidents such as malware infestation, memory analysis, disk analysis, and network analysis.

The open source nature of the platform has not only established a new direction for the industry, but enables a developer or forensic analyst to understand the device at the most fundamental level. Android Forensics covers an open source mobile device platform based on the Linux 2.6 kernel and managed by the Open Handset Alliance. The Android platform is a major source of digital forensic investigation and analysis. This book provides a thorough review of the Android platform including supported hardware devices, the structure of the Android development project and implementation of core services (wireless communication, data storage and other low-level functions). Finally, it will focus on teaching readers how to apply actual forensic techniques to recover data. Ability to forensically acquire Android devices using the techniques outlined in the book Detailed information about Android applications needed for forensics investigations Important information about SQLite, a file based structured data storage relevant for both Android and many other platforms.

Master powerful strategies to acquire and analyze evidence from real-life scenarios About This Book A straightforward guide to address the roadblocks face when doing mobile forensics Simplify mobile forensics using the right mix of methods, techniques, and tools Get valuable advice to put you in the mindset of a forensic professional, regardless of your career level or experience Who This Book Is For This book is for forensic analysts and law enforcement and IT security officers who have to deal with digital evidence as part of their daily job. Some basic familiarity with digital forensics is assumed, but no experience with mobile forensics is required. What You Will Learn Understand the challenges of mobile forensics Grasp how to properly deal with digital evidence Explore the types of evidence available on iOS, Android, Windows, and BlackBerry mobile devices Know what forensic outcome to expect under given circumstances Deduce when and how to apply physical, logical, over-the-air, or low-level (advanced) acquisition methods Get in-depth knowledge of the different acquisition methods for all major mobile platforms Discover important mobile acquisition tools and techniques for all of the major platforms In Detail Investigating digital media is impossible without forensic tools. Dealing with complex forensic problems requires the use of dedicated tools, and even more importantly, the right strategies. In this book, you'll learn strategies and methods to deal with information stored on smartphones and tablets and see how to put the right tools to work. We begin by helping you understand the concept of mobile devices as a source of valuable evidence. Throughout this book, you will explore strategies and "plays" and decide when to use each technique. We cover important techniques such as seizing techniques to shield the device, and acquisition techniques including physical acquisition (via a USB connection), logical acquisition via data backups, over-the-air acquisition. We also explore cloud analysis, evidence discovery and data analysis, tools for mobile forensics, and tools to help you discover and analyze evidence. By the end of the book, you will have a better understanding of the tools and methods used to deal with the challenges of acquiring, preserving, and extracting evidence stored on smartphones, tablets, and the cloud. Style and approach This book takes a unique strategy-based approach, executing them on real-world scenarios. You will be introduced to thinking in terms of "game plans," which are essential to succeeding in analyzing evidence and conducting investigations.

iOS Forensic Analysis provides an in-depth look at investigative processes for the iPhone, iPod Touch, and iPad devices. The methods and procedures outlined in the book can be taken into any courtroom. With never-before-published iOS information and data sets that are new and evolving, this book gives the examiner and investigator the knowledge to complete a full device examination that will be credible and accepted in the forensic community.

Use this hands-on, introductory guide to understand and implement digital forensics to investigate computer crime using Windows, the most widely used operating system. This book provides you with the necessary skills to identify an intruder's footprints and to gather the necessary digital evidence in a forensically sound manner to prosecute in a court of law. Directed toward users with no experience in the digital forensics field, this book provides guidelines and best practices when conducting investigations as well as teaching you how to use a variety of tools to investigate computer crime. You will be prepared to handle problems such as law violations, industrial espionage, and use of company resources for private use. Digital Forensics Basics is written as a series of tutorials with each task demonstrating how to use a specific computer forensics tool or technique. Practical information is provided and users can read a task and then implement it directly on their devices. Some theoretical information is presented to define terms used in each technique and for users with varying IT skills. What You'll Learn Assemble computer forensics lab requirements, including workstations, tools, and more Document the digital crime scene, including preparing a sample chain of custody form Differentiate between law enforcement agency and corporate investigations Gather intelligence using OSINT sources Acquire and analyze digital evidence Conduct in-depth forensic analysis of Windows operating systems covering Windows 10–specific feature forensics Utilize anti-forensic techniques, including steganography, data destruction techniques, encryption, and anonymity techniques Who This Book Is For Police and other law enforcement personnel, judges (with no technical background), corporate and nonprofit management, IT specialists and computer security professionals, incident response team members, IT military and intelligence services officers, system administrators, e-business security professionals, and banking and insurance professionals

Understand malware analysis and its practical implementation Key Features Explore the key concepts of malware analysis and memory forensics using real-world examples Learn the art of detecting, analyzing, and investigating malware threats Understand adversary tactics and techniques Book Description Malware analysis and memory forensics are powerful analysis and investigation techniques used in reverse engineering, digital forensics, and incident response. With adversaries becoming sophisticated and carrying out advanced malware attacks on critical infrastructures, data centers, and private and public organizations, detecting, responding to, and investigating such intrusions is critical to information security professionals. Malware analysis and memory forensics have become must-have skills to fight advanced malware, targeted attacks, and security breaches. This book teaches you the concepts, techniques, and tools to understand the behavior and characteristics of malware through malware analysis. It also teaches you techniques to investigate and hunt malware using memory forensics. This book introduces you to the basics of malware analysis, and then gradually progresses into the more advanced concepts of code analysis and memory forensics. It uses real-world malware samples, infected memory images, and visual diagrams to help you gain a better understanding of the subject and to equip you with the skills required to analyze, investigate, and respond to malware-related incidents. What you will learn Create a safe and isolated lab environment for malware analysis Extract the metadata associated with malware Determine malware's interaction with the system Perform code analysis using IDA Pro and x64dbg Reverse-engineer various malware functionalities Reverse engineer and decode common encoding/encryption algorithms Reverse-engineer malware code injection and hooking techniques Investigate and hunt malware using memory forensics Who this book is for This book is for incident responders, cyber-security investigators, system administrators, malware analyst, forensic practitioners, student, or curious security professionals interested in learning malware analysis and memory forensics. Knowledge of programming languages such as C and Python is helpful but is not mandatory. If you have written few lines of code and have a basic understanding of programming concepts, you'll be able to get most out of this book.

The X-Ways Forensics Practitioner's Guide is more than a manual-it's a complete reference guide to the full use of one of the most powerful forensic applications available, software that is used by a wide array of law enforcement agencies and private forensic examiners on a daily basis. In the X-Ways Forensics Practitioner's Guide, the authors provide you with complete coverage of this powerful tool, walking you through configuration and X-Ways fundamentals, and then moving through case flow, creating and importing hash databases, digging into OS artifacts, and conducting searches. With X-Ways Forensics Practitioner's Guide, you will be able to use X-Ways Forensics to its fullest potential without any additional training. The book takes you from installation to the most advanced features of the software. Once you are familiar with the basic components of X-Ways, the authors demonstrate never-before-documented features using real life examples and information on how to present investigation results. The book culminates with chapters on reporting, triage and preview methods, as well as electronic discovery and cool X-Ways apps. Provides detailed explanations of the complete forensic investigation processe using X-Ways Forensics. Goes beyond the basics: hands-on case demonstrations of never-before-documented features of X-Ways. Provides the best resource of hands-on information to use X-Ways Forensics.

This book constitutes the refereed proceedings of the 32nd IFIP TC 11 International Conference on ICT Systems Security and Privacy Protection, SEC 2017, held in Rome, Italy, in May 2017. The 38 revised full papers presented were carefully reviewed and selected from 199 submissions. The papers are organized in the following topical sections: network security and cyber attacks; security and privacy in social applications and cyber attacks defense; private queries and aggregations; operating systems and firmware security; user authentication and policies; applied cryptography and voting schemes; software security and privacy; privacy; and digital signature, risk management, and code reuse attacks.

The Definitive Guide to File System Analysis: Key Concepts and Hands-on Techniques Most digital evidence is stored within the computer's file system, but understanding how file systems work is one of the most technically challenging concepts for a digital investigator because there exists little documentation. Now, security expert Brian Carrier has written the definitive reference for everyone who wants to understand and be able to testify about how file system analysis is performed. Carrier begins with an overview of investigation and computer foundations and then gives an authoritative, comprehensive, and illustrated overview of contemporary volume and file systems: Crucial information for discovering hidden evidence, recovering deleted data, and validating your tools. Along the way, he describes data structures, analyzes example disk images, provides advanced investigation scenarios, and uses today's most valuable open source file system analysis tools—including tools he personally developed. Coverage includes Preserving the digital crime scene and duplicating hard disks for "dead analysis" Identifying hidden data on a disk's Host Protected Area (HPA) Reading source data: Direct versus BIOS access, dead versus live acquisition, error handling, and more Analyzing DOS, Apple, and GPT partitions; BSD disk labels; and Sun Volume Table of Contents using key concepts, data structures, and specific techniques Analyzing the contents of multiple disk volumes, such as RAID and disk spanning Analyzing FAT, NTFS, Ext2, Ext3, UFS1, and UFS2 file systems using key concepts, data structures, and specific techniques Finding evidence: File metadata, recovery of deleted files, data hiding locations, and more Using The Sleuth Kit (TSK), Autopsy Forensic Browser, and related open source tools When it comes to file system analysis, no other book offers this much detail or expertise. Whether you're a digital forensics specialist, incident response team member, law enforcement officer, corporate security specialist, or auditor, this book will become an indispensable resource for forensic investigations, no matter what analysis tools you use.

Get up and running with collecting evidence using forensics best practices to present your findings in judicial or administrative proceedings Key Features Learn the core

techniques of computer forensics to acquire and secure digital evidence skillfully Conduct a digital forensic examination and document the digital evidence collected Analyze security systems and overcome complex challenges with a variety of forensic investigations Book Description A computer forensics investigator must possess a variety of skills, including the ability to answer legal questions, gather and document evidence, and prepare for an investigation. This book will help you get up and running with using digital forensic tools and techniques to investigate cybercrimes successfully. Starting with an overview of forensics and all the open source and commercial tools needed to get the job done, you'll learn core forensic practices for searching databases and analyzing data over networks, personal devices, and web applications. You'll then learn how to acquire valuable information from different places, such as filesystems, e-mails, browser histories, and search queries, and capture data remotely. As you advance, this book will guide you through implementing forensic techniques on multiple platforms, such as Windows, Linux, and macOS, to demonstrate how to recover valuable information as evidence. Finally, you'll get to grips with presenting your findings efficiently in judicial or administrative proceedings. By the end of this book, you'll have developed a clear understanding of how to acquire, analyze, and present digital evidence like a proficient computer forensics investigator. What you will learn Understand investigative processes, the rules of evidence, and ethical guidelines Recognize and document different types of computer hardware Understand the boot process covering BIOS, UEFI, and the boot sequence Validate forensic hardware and software Discover the locations of common Windows artifacts Document your findings using technically correct terminology Who this book is for If you're an IT beginner, student, or an investigator in the public or private sector this book is for you.This book will also help professionals and investigators who are new to incident response and digital forensics and interested in making a career in the cybersecurity domain.

Ten Strategies of a World-Class Cyber Security Operations Center conveys MITRE's accumulated expertise on enterprise-grade computer network defense. It covers ten key qualities of leading Cyber Security Operations Centers (CSOCs), ranging from their structure and organization, to processes that best enable smooth operations, to approaches that extract maximum value from key CSOC technology investments. This book offers perspective and context for key decision points in structuring a CSOC, such as what capabilities to offer, how to architect large-scale data collection and analysis, and how to prepare the CSOC team for agile, threat-based response. If you manage, work in, or are standing up a CSOC, this book is for you. It is also available on MITRE's website, www.mitre.org.

Windows Forensic Analysis ToolkitAdvanced Analysis Techniques for Windows 8Syngress Press

Windows Forensic Analysis DVD Toolkit, 2nd Edition, is a completely updated and expanded version of Harlan Carvey's best-selling forensics book on incident response and investigating cybercrime on Windows systems. With this book, you will learn how to analyze data during live and post-mortem investigations. New to this edition is Forensic Analysis on a Budget, which collects freely available tools that are essential for small labs, state (or below) law enforcement, and educational organizations. The book also includes new pedagogical elements, Lessons from the Field, Case Studies, and War Stories that present real-life experiences by an expert in the trenches, making the material real and showing the why behind the how. The companion DVD contains significant, and unique, materials (movies, spreadsheet, code, etc.) not available anyplace else because they were created by the author. This book will appeal to digital forensic investigators, IT security professionals, engineers, and system administrators as well as students and consultants. Best-Selling Windows Digital Forensic book completely updated in this 2nd Edition Learn how to Analyze Data During Live and Post-Mortem Investigations DVD Includes Custom Tools, Updated Code, Movies, and Spreadsheets!

The first book completely devoted to this important part of security in a Windows environment.

Now in its third edition, Harlan Carvey has updated Windows Forensic Analysis Toolkit to cover Windows 7 systems. The primary focus of this edition is on analyzing Windows 7 systems and on processes using free and open-source tools. The book covers live response, file analysis, malware detection, timeline, and much more. The author presents real-life experiences from the trenches, making the material realistic and showing the why behind the how. New to this edition, the companion and toolkit materials are now hosted online. This material consists of electronic printable checklists, cheat sheets, free custom tools, and walk-through demos. This edition complements Windows Forensic Analysis Toolkit, 2nd Ed. (ISBN: 9781597494229), which focuses primarily on XP. Complete coverage and examples on Windows 7 systems Contains Lessons from the Field, Case Studies, and War Stories Companion online material, including electronic printable checklists, cheat sheets, free custom tools, and walk-through demos

Contemporary Digital Forensic Investigations of Cloud and Mobile Applications comprehensively discusses the implications of cloud (storage) services and mobile applications on digital forensic investigations. The book provides both digital forensic practitioners and researchers with an up-to-date and advanced knowledge of collecting and preserving electronic evidence from different types of cloud services, such as digital remnants of cloud applications accessed through mobile devices. This is the first book that covers the investigation of a wide range of cloud services. Dr. Kim-Kwang Raymond Choo and Dr. Ali Dehghantanha are leading researchers in cloud and mobile security and forensics, having organized research, led research, and been published widely in the field. Users will gain a deep overview of seminal research in the field while also identifying prospective future research topics and open challenges. Presents the most current, leading edge research on cloud and mobile application forensics, featuring a panel of top experts in the field Introduces the first book to provide an in-depth overview of the issues surrounding digital forensic investigations in cloud and associated mobile apps Covers key technical topics and provides readers with a complete understanding of the most current research findings Includes discussions on future research directions and challenges

Unlike other books, courses and training that expect an analyst to piece together individual instructions into a cohesive investigation, Investigating Windows Systems provides a walk-through of the analysis process, with descriptions of the thought process and analysis decisions along the way. Investigating Windows Systems will not address topics which have been covered in other books, but will expect the reader to have some ability to discover the detailed usage of tools and to perform their own research. The focus of this volume is to provide a walk-through of the analysis process, with descriptions of the thought process and the analysis decisions made along the way. A must-have guide for those in the field of digital forensic analysis and incident response. Provides the reader with a detailed walk-through of the analysis process, with decision points along the way, assisting the user in understanding the resulting data Coverage will include malware detection, user activity, and how to set up a testing environment Written at a beginner to intermediate level for anyone engaging in the field of digital forensic analysis and incident response