

## ***Windows Forensic Analysis Toolkit Advanced Analysis Techniques For Windows 8***

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.

**Master the art of digital forensics and analysis with Python About This Book** Learn to perform forensic analysis and investigations with the help of Python, and gain an advanced understanding of the various Python libraries and frameworks **Analyze Python scripts to extract metadata and investigate forensic artifacts** The writers, Dr. Michael Spreitzenbarth and Dr. Johann Uhrmann, have used their experience to craft this hands-on guide to using Python for forensic analysis and investigations **Who This Book Is For** If you are a network security professional or forensics analyst who wants to gain a deeper understanding of performing forensic analysis with Python, then this book is for you. Some Python experience would be helpful. **What You Will Learn** Explore the forensic analysis of different platforms such as Windows, Android, and vSphere Semi-automatically reconstruct major parts of the system activity and time-line Leverage Python ctypes for protocol decoding Examine artifacts from mobile, Skype, and browsers Discover how to utilize Python to improve the focus of your analysis Investigate in volatile memory with the help of volatility on the Android and Linux platforms **In Detail** Digital forensic analysis is the process of examining and extracting data digitally and examining it. Python has the combination of power, expressiveness, and ease of use that makes it an essential complementary tool to the traditional, off-the-shelf digital forensic tools. This book will teach you how to perform forensic analysis and investigations by exploring the capabilities of various Python libraries. The book starts by explaining the building blocks of the Python programming language, especially ctypes in-depth, along with how to automate typical tasks in file system analysis, common correlation tasks to discover anomalies, as well as templates for investigations. Next, we'll show you cryptographic algorithms that can be used during forensic investigations to check for known files or to compare suspicious files with online services such as VirusTotal or Mobile-Sandbox. Moving on, you'll learn how to sniff on the network, generate and analyze network flows, and perform log correlation with the help of Python scripts and tools. You'll get to know about the concepts of virtualization and how virtualization influences IT forensics, and you'll discover how to perform forensic analysis of a jailbroken/rooted mobile device that is based on iOS or Android. Finally, the book teaches you how to analyze volatile memory and search for known malware samples based on YARA rules. **Style and approach** This easy-to-follow guide will demonstrate forensic analysis techniques by showing you how to solve real-world-scenarios step by step.

**The definitive guide to incident response--updated for the first time in a decade!** Thoroughly revised to cover the latest and most effective tools and techniques, **Incident Response & Computer Forensics, Third Edition** arms you with the information you need to get your organization out of trouble when data breaches occur. This practical resource covers the entire lifecycle of incident response, including preparation, data collection, data analysis, and remediation. Real-world case studies reveal the methods behind--and remediation strategies for--today's most insidious attacks. **Architect an infrastructure that allows for methodical investigation and remediation** Develop leads, identify indicators of compromise, and

**determine incident scope Collect and preserve live data Perform forensic duplication Analyze data from networks, enterprise services, and applications Investigate Windows and Mac OS X systems Perform malware triage Write detailed incident response reports Create and implement comprehensive remediation plans**

**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**

**Practical Linux Forensics**

**Second International ICST Conference, ICDF2C 2010, Abu Dhabi, United Arab Emirates, October 4-6, 2010, Revised Selected Papers**

**Windows Forensic Analysis Toolkit, 3rd Edition**

**32nd IFIP TC 11 International Conference, SEC 2017, Rome, Italy, May 29-31, 2017, Proceedings**

**Detecting Malware and Threats in Windows, Linux, and Mac Memory**

**Windows Forensic Analysis Toolkit**

**Windows Forensic Analysis Toolkit Advanced Analysis Techniques for Windows 8 Syngress Press**

Handbook of Digital Forensics and Investigation builds on the success of the Handbook of Computer Crime Investigation, bringing together renowned experts in all areas of digital forensics and investigation to provide the consummate resource for practitioners in the field. It is also designed as an accompanying text to Digital Evidence and Computer Crime. This unique collection details how to conduct digital investigations in both criminal and civil contexts, and how to locate and utilize digital evidence on computers, networks, and embedded systems. Specifically, the Investigative Methodology section of the Handbook provides expert guidance in the three main areas of practice: Forensic Analysis, Electronic Discovery, and Intrusion Investigation. The Technology section is extended and updated to reflect the state of the art in each area of specialization. The main areas of focus in the Technology section are forensic analysis of Windows, Unix, Macintosh, and embedded systems (including cellular telephones and other mobile devices), and investigations involving networks (including enterprise environments and mobile telecommunications technology). This handbook is an essential technical reference and on-the-job guide that IT professionals, forensic practitioners, law enforcement, and attorneys will rely on when confronted with computer related crime and digital evidence of any kind. \*Provides methodologies proven in practice for conducting digital investigations of all kinds \*Demonstrates how to locate and interpret a wide variety of digital evidence, and how it can be useful in investigations \*Presents tools in the context of the investigative process, including EnCase, FTK, ProDiscover, foremost, XACT, Network Miner, Splunk, flow-tools, and many other specialized utilities and

analysis platforms \*Case examples in every chapter give readers a practical understanding of the technical, logistical, and legal challenges that arise in real investigations

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 malicious 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

The widespread use of information and communications technology (ICT) has created a global platform for the exchange of ideas, goods and services, the benefits of which are enormous. However, it has also created boundless opportunities for fraud and deception. Cybercrime is one of the biggest growth industries around the globe, whether it is in the form of violation of company policies, fraud, hate crime, extremism, or terrorism. It is therefore paramount that the security industry raises its game to combat these threats. Today's top priority is to use computer technology to fight computer crime, as our commonwealth is protected by firewalls rather than firepower. This is an issue of global importance as new technologies have provided a world of opportunity for criminals. This book is a compilation of the collaboration between the researchers and practitioners in the security field; and provides a comprehensive literature on current and future e-security needs across applications, implementation, testing or investigative techniques, judicial processes and criminal intelligence. The intended audience includes members in academia, the public and private sectors, students and those who are interested in and will benefit from this handbook.

Strengthening Forensic Science in the United States

Windows Forensics

Mastering Python Forensics

Investigate network attacks and find evidence using common network forensic tools

Fundamentals of Network Forensics

*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.*

*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*

*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.*

*Scores of talented and dedicated people serve the forensic science community, performing vitally important work. However, they are often constrained by lack of adequate resources, sound policies, and national support. It is clear that change and advancements, both systematic and scientific, are needed in a number of forensic science disciplines to ensure the reliability of work, establish enforceable standards, and promote best practices with consistent application. Strengthening Forensic Science in the United States: A Path Forward provides a detailed plan for addressing these needs and suggests the creation of a new government entity, the National Institute of Forensic Science, to establish and enforce standards within the forensic science community. The benefits of improving and*

*regulating the forensic science disciplines are clear: assisting law enforcement officials, enhancing homeland security, and reducing the risk of wrongful conviction and exoneration. Strengthening Forensic Science in the United States gives a full account of what is needed to advance the forensic science disciplines, including upgrading of systems and organizational structures, better training, widespread adoption of uniform and enforceable best practices, and mandatory certification and accreditation programs. While this book provides an essential call-to-action for congress and policy makers, it also serves as a vital tool for law enforcement agencies, criminal prosecutors and attorneys, and forensic science educators.*

*Digital Triage Forensics*

*Advances in Digital Forensics V*

*for iPhone, iPad, and iPod touch*

*iOS Forensic Analysis*

*Investigating and Analyzing Malicious Code*

*Advanced Digital Forensic Analysis of the Windows Registry*

The Definitive Guide to File System Analysis: Key Concepts and Hands-on Techniques Most digital evidence is stored within the computer system, but understanding how file systems work is one of the most technically challenging concepts for a digital investigator because of the little documentation. Now, security expert Brian Carrier has written the definitive reference for everyone who wants to understand and testify about how file system analysis is performed. Carrier begins with an overview of investigation and computer foundations and then provides 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, and advanced investigation scenarios, and uses today's most valuable open source file system analysis tools—including tools he personally created. Coverage includes Preserving the digital crime scene and duplicating hard disks for "dead analysis" Identifying hidden data on a disk's Hidden Protected Area (HPA) Reading source data: Direct versus BIOS access, dead versus live acquisition, error handling, and more Analyzing Disk Partitions: 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 you use.

I decided to write this book for a couple of reasons. One was that I've now written a couple of books that have to do with incident response and forensic analysis on Windows systems, and I used a lot of Perl in both books. Okay...I'll come clean...I used nothing but Perl in both books.

I've seen as a result of this is that many readers want to use the tools, but don't know how...they simply aren't familiar with Perl, with interpreted (or scripting) languages in general, and may not be entirely comfortable with running tools at the command line. This book is for anyone who has an interest in useful Perl scripting, in particular on the Windows platform, for the purpose of incident response, analysis, and application monitoring. While a thorough grounding in scripting languages (or in Perl specifically) is not required, it helps and more completely understanding the material and code presented in this book. This book contains information that is useful to consistently perform incident response and computer forensics, specifically as those activities pertain to MS Windows systems (Windows 2000, XP, and some Vista). My hope is that not only will consultants (such as myself) find this material valuable, but so will system administrators, law enforcement officers, and students in undergraduate and graduate programs focusing on computer forensics. \*Perl Scripting for Live Response Using Perl, there's a great deal of information you can retrieve from systems, locally or remotely, as part of troubleshooting or investigating an issue. Perl scripts can be run from a central management point, reaching out to remote systems in order to collect information, or they can be "compiled" into standalone executables using PAR, PerlApp, or Perl2Exe so that they can be run on systems that do not have ActiveState Perl distribution (or any other Perl distribution) installed. \*Perl Scripting for Computer Forensic Analysis Perl is an extremely useful and powerful tool for performing computer forensic analysis. While there are applications available that let an examiner access acquired images and provide some modicum of visualization, there are relatively few tools that meet the specific needs of a specific examiner working on a specific system where the use of Perl really shines through and becomes apparent. \*Perl Scripting for Application Monitoring Working with enterprise-level Windows applications requires a great deal of analysis and constant monitoring. Automating the monitoring portion of this effort can save a great deal of time, reduce system downtimes, and improve the reliability of your overall application. By utilizing Perl scripts and integrating them with the application technology, you can easily build a simple monitoring framework that can alert you to current or future application issues. 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: 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. 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

Gain basic skills in network forensics and learn how to apply them effectively Key Features Investigate network threats with ease Practical tasks such as intrusion detection, network analysis, and scanning Learn forensics investigation at the network level Book Description Network forensics is a subset of digital forensics that deals with network attacks and their investigation. In the era of network attacks and malware, it's now more important than ever to have skills to investigate network attacks and vulnerabilities. Hands-On Network Forensics starts with core concepts within network forensics, including coding, networking, forensics tools, and methodologies for forensic investigations. You

explore the tools used for network forensics, followed by understanding how to apply those tools to a PCAP file and write the accompanying report. In addition to this, you will understand how statistical flow analysis, network enumeration, tunneling and encryption, and malware detection can be used to investigate your network. Towards the end of this book, you will discover how network correlation works and bring all the information from different types of network devices together. By the end of this book, you will have gained hands-on experience performing forensics analysis tasks. What you will learn Discover and interpret encrypted traffic Learn about various protocols Understand malware language over wire Gain insights into the most widely used malware Correlate data collected from attacks Develop tools and customize for network forensics automation Who this book is for The book targets incident responders, network engineers, analysts, forensic engineers, network administrators who want to extend their knowledge from the surface to the deep levels of understanding the science behind protocols, critical indicators in an incident and conducting a forensic search over the wire.

Malware Forensics

Windows Forensics Cookbook

A Research Perspective

Investigating Windows Systems

Handbook of Electronic Security and Digital Forensics

A Path Forward

***Learn the skills you need to take advantage of Kali Linux for digital forensics investigations using this comprehensive guide About This Book Master powerful Kali Linux tools for digital investigation and analysis Perform evidence acquisition, preservation, and analysis using various tools within Kali Linux Implement the concept of cryptographic hashing and imaging using Kali Linux Perform memory forensics with Volatility and internet forensics with Xplico. Discover the capabilities of professional forensic tools such as Autopsy and DFF (Digital Forensic Framework) used by law enforcement and military personnel alike Who This Book Is For This book is targeted at forensics and digital investigators, security analysts, or any stakeholder interested in learning digital forensics using Kali Linux. Basic knowledge of Kali Linux will be an advantage. What You Will Learn Get to grips with the fundamentals of digital forensics and explore best practices Understand the workings of file systems, storage, and data fundamentals Discover incident response procedures and best practices Use DC3DD and Guymager for acquisition and preservation techniques Recover deleted data with Foremost and Scalpel Find evidence of accessed programs and malicious programs using Volatility. Perform network and internet capture analysis with Xplico Carry out professional digital forensics investigations using the DFF and Autopsy automated forensic suites In Detail Kali Linux is a Linux-based distribution used mainly for penetration testing and digital forensics. It has a wide range of tools to help in forensics investigations and incident response mechanisms. You will start by understanding the fundamentals of digital forensics and setting up your Kali Linux environment to perform different investigation practices. The book will delve into the realm of operating systems and the various formats for file storage, including secret hiding places unseen by the end user or even the operating system. The book will also teach you to create forensic images of data and maintain integrity using hashing tools. Next, you will also master some advanced topics such as autopsies and acquiring investigation data from the network, operating system memory, and so on. The book introduces you to powerful tools that will take your forensic abilities and investigations to a professional level, catering for all aspects of full digital***

*forensic investigations from hashing to reporting. By the end of this book, you will have had hands-on experience in implementing all the pillars of digital forensics—acquisition, extraction, analysis, and presentation using Kali Linux tools. Style and approach While covering the best practices of digital forensics investigations, evidence acquisition, preservation, and analysis, this book delivers easy-to-follow practical examples and detailed labs for an easy approach to learning forensics. Following the guidelines within each lab, you can easily practice all readily available forensic tools in Kali Linux, within either a dedicated physical or virtual machine.*

*A resource to help forensic investigators locate, analyze, and understand digital evidence found on modern Linux systems after a crime, security incident or cyber attack. Practical Linux Forensics dives into the technical details of analyzing postmortem forensic images of Linux systems which have been misused, abused, or the target of malicious attacks. It helps forensic investigators locate and analyze digital evidence found on Linux desktops, servers, and IoT devices. Throughout the book, you learn how to identify digital artifacts which may be of interest to an investigation, draw logical conclusions, and reconstruct past activity from incidents. You'll learn how Linux works from a digital forensics and investigation perspective, and how to interpret evidence from Linux environments. The techniques shown are intended to be independent of the forensic analysis platforms and tools used. Learn how to:*

- Extract evidence from storage devices and analyze partition tables, volume managers, popular Linux filesystems (Ext4, Btrfs, and Xfs), and encryption*
- Investigate evidence from Linux logs, including traditional syslog, the systemd journal, kernel and audit logs, and logs from daemons and applications*
- Reconstruct the Linux startup process, from boot loaders (UEFI and Grub) and kernel initialization, to systemd unit files and targets leading up to a graphical login*
- Perform analysis of power, temperature, and the physical environment of a Linux machine, and find evidence of sleep, hibernation, shutdowns, reboots, and crashes*
- Examine installed software, including distro installers, package formats, and package management systems from Debian, Fedora, SUSE, Arch, and other distros*
- Perform analysis of time and Locale settings, internationalization including language and keyboard settings, and geolocation on a Linux system*
- Reconstruct user login sessions (shell, X11 and Wayland), desktops (Gnome, KDE, and others) and analyze keyrings, wallets, trash cans, clipboards, thumbnails, recent files and other desktop artifacts*
- Analyze network configuration, including interfaces, addresses, network managers, DNS, wireless artifacts (Wi-Fi, Bluetooth, WWAN), VPNs (including WireGuard), firewalls, and proxy settings*
- Identify traces of attached peripheral devices (PCI, USB, Thunderbolt, Bluetooth) including external storage, cameras, and mobiles, and reconstruct printing and scanning activity*

*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.*

**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**

**Mobile Forensics – Advanced Investigative Strategies**

**The Art of Memory Forensics**

**Incident Response & Computer Forensics, Third Edition**

**Handbook of Digital Forensics and Investigation**

**Digital Forensics Field Guides**

**Applied Incident Response**

"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"--

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

This timely text/reference presents a detailed introduction to the essential aspects of computer network forensics. The book considers not only how to uncover information hidden in email messages, web pages and web servers, but also what this reveals about the functioning of the Internet and its core protocols. This, in turn, enables the identification of shortcomings and highlights where improvements can be made for a more secure network. Topics and features: provides learning objectives in every chapter, and review questions throughout the book to test understanding; introduces the basic concepts of network process models, network forensics frameworks and network forensics tools; discusses various techniques for the acquisition of packets in a network forensics system, network forensics analysis, and attribution in network forensics; examines a range of advanced topics, including botnet, smartphone, and cloud forensics; reviews a number of freely available tools for performing forensic activities.

A guide to the Windows Registry cover such topics as Registry structure, live analysis, security, system hive, and tracking user activity. Live Response, Forensic Analysis, and Monitoring

Digital Forensics and Cyber Crime

Operating System Forensics

Fifth IFIP WG 11.9 International Conference on Digital Forensics, Orlando, Florida, USA, January 26-28, 2009, Revised Selected Papers

A Guide for Digital Investigators

ICT Systems Security and Privacy Protection

*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!*

*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 tool 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. 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. 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 browsers 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*

*The Field Guide for Corporate Computer Investigations*

*Hands-On Network Forensics*

*Malware Forensics Field Guide for Windows Systems*

*Digital Forensics Tools and Techniques*

*Investigation, Analysis, and Mobile Security for Google Android*

*Perl Scripting for Windows Security*

**Dissecting the dark side of the Internet with its infectious worms, botnets, rootkits, and Trojan horse programs (known as malware) is a treacherous 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**

**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.**

**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.**

**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.**

**Perform data acquisition, digital investigation, and threat analysis using Kali Linux tools**

**Digital Forensics with Open Source Tools**

**Practical Windows Forensics**

**Forensic Examination of Windows-Supported File Systems**

**File System Forensic Analysis**

**Digital Forensics with Kali Linux**

Digital Triage Forensics: Processing the Digital Crime Scene provides the tools, training, and techniques in Digital Triage Forensics (DTF), a procedural model for the investigation of digital crime scenes including both traditional crime scenes and the more complex battlefield crime scenes. The DTF is used by the U.S. Army and other traditional police agencies for current digital forensic applications. The tools, training, and techniques from this practice are being brought to the public in this book for the first time. Now corporations, law enforcement, and consultants can benefit from the unique perspectives of the experts who coined Digital Triage Forensics. The text covers the collection of digital media and data from cellular devices and SIM cards. It also presents outlines of pre- and post- blast investigations. This book is divided into six chapters that present an overview of the age of warfare, key concepts of digital triage and battlefield forensics, and methods of conducting pre/post-blast investigations. The first chapter considers how improvised explosive devices (IEDs) have changed from basic booby traps to the primary attack method of the insurgents in Iraq and Afghanistan. It also covers the emergence of a sustainable vehicle for prosecuting enemy combatants under the Rule of Law in Iraq as U.S. airmen, marines, sailors, and soldiers perform roles outside their normal military duties and responsibilities. The remaining chapters detail the benefits of DTF model, the roles and responsibilities of the weapons intelligence team (WIT), and the challenges and issues of collecting digital media in battlefield situations. Moreover, data collection and processing as well as debates on the changing role of digital forensics investigators are explored. This book will be helpful to forensic scientists, investigators, and military personnel, as well as to students and beginners in forensics. Includes coverage on collecting digital media Outlines pre- and post-blast investigations Features content on collecting data from cellular devices and SIM cards

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.

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

Windows Forensic Analysis DVD Toolkit

Windows Registry Forensics

Processing the Digital Crime Scene

Learning Malware Analysis

Explore the concepts, tools, and techniques to analyze and investigate Windows malware

Advanced Analysis Techniques for Windows 7

**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

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

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.

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. Advanced Analysis Techniques for Windows 8

**Android Forensics**