Open Source Software for Digital Forensics

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Editors

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Springer

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Preface

This book is a collection of revised and extended chapters based on papers presented at the Open Source Software for Computer and Network Forensics (OSSCoNF) workshop, held in Milan in September 2008 at the World Computing Congress, co-located with the 4th Open Source Software Conference, and some new work purposely commissioned for the book. It is aimed at scholars and free software authors, researchers, and digital forensics practitioners; it can serve both as a research archival resource, and an introductory text. To the best of our knowledge, it is the first research book totally oriented to the use of Free Libre Open Source Software (FLOSS) in digital forensics.

The purpose of the OSSCoNF workshop was twofold. First, we wished to determine the specific needs in computer and network forensics that are best addressed by the use and the creation of open source software. Secondly, we wished to give the authors a forum to present their tools and the research work that went into their design and development.

Similarly, this book consists of two parts, the first dealing with the motivations for using FLOSS in computer forensics today, and the second describing a number of tools (some that were presented at OSSCoNF), along with their evolution and some more extensive explanation of the details.

Part 1 consists of three chapters. In chapter 1 Zanero and Huebner discuss the importance of open source software in digital forensics with the focus on provably verifiable findings, and on easing reliance on expensive closed source software. Chapter 2 by Huebner, Bem and Cheung is dedicated to the application of the open source software tools in computer forensics education at tertiary level. The authors argue that open source tools are more suitable than commercial tools, as they provide the opportunity for students to gain in-depth understanding and appreciation of the computer forensic process. In chapter 3 Bem explores the potential role of virtual environments in the analysis phase of computer forensics investigations, and proposes a method which may lead to a gradual shift to open source software.

Part 2 is dedicated to novel FLOSS tools for computer and network forensics, presented in five chapters. In chapter 4, Vermaas, Simons and Meijer describe the Open Computer Forensics Architecture (OCFA), an automated system that dissects complex file types, extracts metadata from files and ultimately creates indexes on forensic images of seized computers. Chapter 5 by Giustini, Andreolini and

Colajanni presents CAINE (Computer Aided INvestigative Environment), a new GNU/Linux live distribution that contains a collection of tools wrapped up into a user friendly environment. In chapter 6, Gomez, Rojas and Mata describe VALI, a correlation model based on the concept of vector clocks to generate graphs showing the relationships between the reported events and possibly discovering unknown attack patterns. Chapter 7, by Cavalca and Goldoni, presents HIVE (Honeynet Infrastructure in Virtualized Environment), a novel highly scalable automated data collection and analysis architecture they designed. And finally, in chapter 7, Bassetti and Frati describe the Selective File Dumper, a Linux Bash script they developed to extract all the referenced, deleted and unallocated files and to perform a keyword search in a simple way.

We trust that you will find this collection educational and informative, and that it may encourage the reader to explore the existing FLOSS tools in digital forensics and to inspire future authors to create new innovative FLOSS tools for the forensic investigations community.

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E. Huebner and S. Zanero

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