

Advances in Intelligent Systems and Computing 866

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# Intelligent Computing & Optimization

 Springer

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## Intelligent Computing & Optimization

Editors: **Vasant**, Pandian, **Zelinka**, Ivan, **Weber**, Gerhard-Wilhelm (Eds.)

ISSN 2194-5357 ISSN 2194-5365 (electronic)  
Advances in Intelligent Systems and Computing  
ISBN 978-3-030-00978-6 ISBN 978-3-030-00979-3 (cBook)  
<https://doi.org/10.1007/978-3-030-00979-3>

Library of Congress Control Number: 2018955576

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# Investigation Model for Locating Data Remnants on Cloud Storage

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**Abstract.** Cloud storage services allow users to store their data online and remotely access, maintain, manage, and back up their data from anywhere through the Internet. Although this storage is helpful, it challenges digital forensic investigators and practitioners in collecting, identifying, acquiring, and preserving evidential data. This research proposes an investigation scheme for analyzing data remnants and determining probative artefacts in a cloud environment. Using the Box cloud as a case study, we collect the data remnants available on end-user device storage following the accessing, uploading, and storing of data in the cloud storage. The data remnants are collected from several sources, such as client software files, Prefetch, directory listings, registries, browsers, network PCAP, and memory and link files. Results indicate that the collected data remnants are helpful in determining a sufficient number of artefacts about investigated cybercrimes.

**Keywords:** Forensic science · Digital forensic · Cloud storage  
Cybercrime investigation · Box cloud · Evidence collection · Data remnants  
Artefacts

## 1 Introduction

Cloud storage can be considered a component of cloud computing. This storage can also be a model of data storage in which the digital data are stored in logical pools, the physical storage spans multiple servers (and often locations), and the physical environment is typically owned and managed by a hosting company. The providers of cloud storage are responsible for keeping the data accessible and available and the physical environment protected and running smoothly.

World Networks [1] stated that “there are questions should be asked from any business that anticipates using cloud based on services, the question is: What can my cloud provider do for me and for my data in terms of digital forensics data in the event of any legal dispute, criminal or civil cases, or data breaches?” Other studies have compared actual providers. Cloud service providers vary, and this difference