

Investigation Methodology

This methodology outlines the high-level process for conducting a digital forensics investigation using Autopsy 4.20 on a seized hard drive from a washer. Autopsy 4.20 is a powerful open-source digital forensics tool that allows investigators to analyze, search, and recover potential evidence from the storage media. The investigation follows a systematic approach, including preparation, acquisition, examination, analysis, and reporting stages, to ensure the integrity and admissibility of the digital evidence collected. This methodology aims to assist digital forensics professionals in effectively utilizing Autopsy 4.20 for the examination of the washer's hard drive while adhering to best practices and maintaining the chain of custody.

Autopsy assists forensic investigators and law enforcement agencies by recovering deleted files, conducting keyword searches, creating timelines of user activities, analyzing metadata, comparing hash values, examining the Windows Registry, analyzing artifacts, establishing link analysis, generating comprehensive reports, and integrating with other digital forensics tools and databases. Its capabilities aid in efficiently and effectively examining and analyzing digital evidence, providing valuable insights and evidence for legal proceedings. However, it is essential to emphasize that the successful outcome of any investigation relies on the expertise and adherence to proper procedures by the forensic investigators handling the case.


To ensure a seamless and efficient investigation, we diligently adhere to the standard operating procedures (SOPs) outlined in the provided documentation. These SOPs encompass every aspect of our investigation, from incident reporting and response protocols to meticulous documentation and reporting procedures. We handle evidence with the utmost care, preserving its integrity and admissibility to bolster the credibility of our findings. With these protocols as our guide, we set out on a journey of examination and analysis, utilizing the full potential of Autopsy and FTK to extract relevant data and unearth hidden information that may hold the key to the case.

Evidence

1. Time Zone analysis

Value Name	Value Data	Value Data Raw
#	<0	<0
Base	300	300
StandardName	Eastern Standard Time	Eastern Standard Time
StandardBias	0	0
StandardStart	Month 10, week of month 3, day of week 0, Hours:Minutes:Seconds:Milliseconds 2:0:0:0	00-00-04-00-00-00-02-00-00-00-00-00-00-00-00-00-00-00
DaylightName	Eastern Daylight Time	Eastern Daylight Time
DaylightBias	-60	4294967236
DaylightStart	Month 4, week of month 1, day of week 0, Hours:Minutes:Seconds:Milliseconds 2:0:0:0	00-00-04-00-01-00-02-00-00-00-00-00-00-00-00-00-00
ActiveTimeBias	300	300

2. Operating System information

Source Name	S	C	O	Name	Program Name	Processor Architecture	Temporary Files Directory	Path	Product ID	Owner	Data Source
 Washer (S) E01				WASHER1	Microsoft Windows XP	x86	%systemroot%\TEMP	C:\WINDOWS	55274-330-5471047-23865	John Washer	Washer (S) E01

Values

Drag a column header here to group by that column

Value Name	Value Type	Date	Value Stack	Is Deleted	Date Record Reallocated
BuildLab	RegDz	2000.spdnt.020817-11..		<input type="checkbox"/>	
CurrentBuild	RegDz	1.511.1.1 (Obsolete date..	69-00-4E-00	<input type="checkbox"/>	
CurrentBuildNumber	RegDz	3600	2600	<input type="checkbox"/>	01-00
CurrentCpu	RegDz	MultiProcessor Free		<input type="checkbox"/>	40-9F-01-00
CurrentVersion	RegDz	5.1		<input type="checkbox"/>	40-9F-01-00
DigitalProductId	RegBinary	A4-00-00-00-00-00-00-0..		<input type="checkbox"/>	
InstallDate	RegDword	1185326368		<input type="checkbox"/>	
LicenseInfo	RegBinary	34-96-57-38-58-42-42-E..	10-48-7D-00	<input type="checkbox"/>	
PathName	RegDz	C:\WINDOWS	00-00-00-00-00-00	<input type="checkbox"/>	
ProductId	RegDz	15274-338-547047-228..	00-00-00-00	<input type="checkbox"/>	
ProductName	RegDz	Microsoft Windows XP	44-00	<input type="checkbox"/>	
RegDone	RegDz			<input type="checkbox"/>	
RegisteredOrganization	RegDz			<input type="checkbox"/>	
RegisteredOwner	RegDz	John Walker	24-84-7D-88	<input type="checkbox"/>	
SoftwareType	RegDz	SISTEM	01-00-48-34-01-00	<input type="checkbox"/>	
SourcePath	RegDz	D:\336	00-00-00-00	<input type="checkbox"/>	
SystemRoot	RegDz	C:\WINDOWS	01-00-70-84-01-00	<input type="checkbox"/>	

Computer Name:

Computer Name:

3. Installed programs

Installed Programs						22 Results
Table Thumbnail Summary						
This is a DataResult window						Save Table as CSV
Source Name	S	C	O	Program Name	Date/Time	Data Source
software	0			WinZip 11.1 v.11.1.7466	2008-02-13 01:17:01 EET	Washer (5).EO
software	1			WinFids IP v.9.50.5318	2007-08-04 01:19:51 EEST	Washer (5).EO
software	1			Microsoft NetShow Player 2.0	2007-08-04 01:19:49 EEST	Washer (5).EO
software	1			HLPlayer2	2007-08-04 01:19:49 EEST	Washer (5).EO
software	0			Winquest Media Player	2007-07-25 17:52:43 EEST	Washer (5).EO
software	0			Adobe Flash Player 9 Activet v.9	2007-07-25 01:38:30 EEST	Washer (5).EO
software	0			ACL Instant Messenger	2007-07-25 01:27:20 EEST	Washer (5).EO
software	1			Branding	2007-07-25 01:14:06 EEST	Washer (5).EO
software	1			PCHealth	2007-07-25 01:13:05 EEST	Washer (5).EO
software	1			AddressBook	2007-07-25 01:13:01 EEST	Washer (5).EO
software	1			DirectDestination	2007-07-25 01:13:01 EEST	Washer (5).EO
software	1			ICW	2007-07-25 01:13:01 EEST	Washer (5).EO
software	1			NetMeeting	2007-07-25 01:13:01 EEST	Washer (5).EO
software	1			OutlookExpress	2007-07-25 01:13:01 EEST	Washer (5).EO
software	1			DirectDrawEx	2007-07-25 01:12:58 EEST	Washer (5).EO
software	1			Fontstone	2007-07-25 01:12:58 EEST	Washer (5).EO
software	1			SE40	2007-07-25 01:12:58 EEST	Washer (5).EO
software	1			SE4Data	2007-07-25 01:12:58 EEST	Washer (5).EO
software	1			SEBANKEx	2007-07-25 01:12:58 EEST	Washer (5).EO
software	1			SEData	2007-07-25 01:12:58 EEST	Washer (5).EO
software	1			PublicOptionPack	2007-07-25 01:12:58 EEST	Washer (5).EO
software	1			SchedulingAgent	2007-07-25 01:12:58 EEST	Washer (5).EO
software	1			Connection Manager	2007-07-25 01:07:57 EEST	Washer (5).EO

4. Documents, media, pictures, etc.

Listing													1058 Results
Table Thumbnail Summary													
Save Table as CSV													
Name	S	C	O	Modified Time	Change Time	Access Time	Created Time	Size	Flags(D...)	Flags(Meta)	Known	Location	
frmp-bg-savedclose[1].png			0	2007-07-25 22:05:56 EEST	2008-02-13 21:37:39 EET	2008-02-13 21:37:39 EET	2007-07-25 22:05:56 EEST	567	Allocated	Allocated	unknown	Img_Washer (5).EO	
frmp-bg-smallboxbtn[1].png			0	2007-07-25 22:06:19 EEST	2008-02-13 21:37:44 EET	2008-02-13 21:37:44 EET	2007-07-25 22:06:19 EEST	1049	Allocated	Allocated	unknown	Img_Washer (5).EO	
icon-btn-aerial-view-v2[1].png			0	2007-07-25 22:06:22 EEST	2008-02-11 21:29:13 EET	2008-02-13 21:37:49 EET	2007-07-25 22:06:22 EEST	2702	Allocated	Allocated	unknown	Img_Washer (5).EO	
icon-start1[1].png			0	2007-07-25 22:09:30 EEST	2008-02-13 21:37:46 EET	2008-02-13 21:37:46 EET	2007-07-25 22:09:30 EEST	1942	Allocated	Allocated	unknown	Img_Washer (5).EO	
logp_su_36x36[1].png		1		2007-07-25 23:21:39 EEST	2008-02-13 21:37:47 EET	2008-02-13 21:37:47 EET	2007-07-25 23:21:39 EEST	2207	Allocated	Allocated	unknown	Img_Washer (5).EO	
map-controls-top-bg[1].png		0		2007-07-25 22:06:22 EEST	2008-02-13 21:37:47 EET	2008-02-13 21:37:47 EET	2007-07-25 22:06:22 EEST	216	Allocated	Allocated	unknown	Img_Washer (5).EO	
rever[1].png		0		2007-07-25 22:06:22 EEST	2008-02-13 21:37:49 EET	2008-02-13 21:37:49 EET	2007-07-25 22:06:22 EEST	2909	Allocated	Allocated	unknown	Img_Washer (5).EO	
z-7[1].png		1		2007-07-25 22:06:21 EEST	2008-02-13 21:37:39 EET	2008-02-13 21:37:39 EET	2007-07-25 22:06:21 EEST	571	Allocated	Allocated	unknown	Img_Washer (5).EO	
z-on[1].png		0		2007-07-25 22:06:22 EEST	2008-02-13 21:37:40 EET	2008-02-13 21:37:40 EET	2007-07-25 22:06:22 EEST	593	Allocated	Allocated	unknown	Img_Washer (5).EO	
z-11[1].png		1		2007-07-25 22:06:21 EEST	2008-02-13 21:37:40 EET	2008-02-13 21:37:40 EET	2007-07-25 22:06:21 EEST	601	Allocated	Allocated	unknown	Img_Washer (5).EO	
z-14[1].png		1		2007-07-25 22:06:21 EEST	2008-02-13 21:37:40 EET	2008-02-13 21:37:40 EET	2007-07-25 22:06:21 EEST	591	Allocated	Allocated	unknown	Img_Washer (5).EO	
z-3[1].png		0		2007-07-25 22:06:21 EEST	2008-02-13 21:37:39 EET	2008-02-13 21:37:39 EET	2007-07-25 22:06:21 EEST	578	Allocated	Allocated	unknown	Img_Washer (5).EO	
logban_icon.png		0		2004-02-22 03:14:37 EET	2008-02-13 02:34:40 EET	2008-02-13 07:28:01 EET	2008-02-13 07:28:01 EET	1121	Allocated	Allocated	unknown	Img_Washer (5).EO	
pee limit.jpg		1		2007-07-25 23:24:52 EEST	0000-00-00 00:00:00	2008-02-13 03:01:26 EET	2007-07-25 23:23:09 EEST	349948	Allocated	Allocated	unknown	Img_Washer (5).EO	
blocks_image_0_1.png		1		2008-02-13 02:43:04 EET	0000-00-00 00:00:00	2008-02-13 02:43:12 EET	2008-02-13 02:43:12 EET	164279	Allocated	Allocated	unknown	Img_Washer (5).EO	
pee limit.jpg		1		2007-07-25 23:24:52 EEST	0000-00-00 00:00:00	2008-02-13 03:01:26 EET	2007-07-25 23:23:09 EEST	349948	Allocated	Allocated	unknown	Img_Washer (5).EO	
220[1].jpg		1		2007-01-12 21:59:00 EET	2008-02-13 03:23:28 EET	2008-02-13 07:24:49 EET	2008-02-13 07:24:49 EET	411003	Unallocated	Allocated	unknown	Img_Washer (5).EO	
43366488_75[1].jpg				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0	Unallocated		unknown	Img_Washer (5).EO	
icon18_wrench_albkg[1].png				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0	Unallocated		unknown	Img_Washer (5).EO	
5K10[1].jpg				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0	Unallocated		unknown	Img_Washer (5).EO	
dr9[1].jpg				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0	Unallocated		unknown	Img_Washer (5).EO	
5K0[1].jpg				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0	Unallocated		unknown	Img_Washer (5).EO	
101[1].jpg				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0	Unallocated		unknown	Img_Washer (5).EO	
102[1].jpg		1		2008-02-13 04:22:09 EET	2008-02-13 07:22:54 EET	2008-02-13 07:23:16 EET	2008-02-13 04:22:09 EET	783	Unallocated	Allocated	unknown	Img_Washer (5).EO	
103[1].jpg		1		2008-02-13 04:15:54 EET	2008-02-13 07:22:54 EET	2008-02-13 07:23:17 EET	2008-02-13 04:15:54 EET	684	Unallocated	Allocated	unknown	Img_Washer (5).EO	
103[2].jpg		1		2008-02-13 04:15:51 EET	2008-02-13 07:22:54 EET	2008-02-13 07:23:16 EET	2008-02-13 04:15:51 EET	550	Unallocated	Allocated	unknown	Img_Washer (5).EO	
103[3].jpg				0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0000-00-00 00:00:00	0	Unallocated		unknown	Img_Washer (5).EO	

able as CSV

Loc

Save Ta

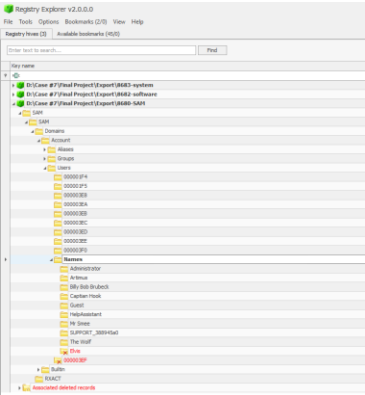
04 April 2012

Table 11

5. Users information

Table Thumbnail Summary								
Name	S	C	O	Login Name	Host	Scope	Real Name	Creation Time
5-1-5-21-1177238915-616249376-839522115-1000			0	HelpAssistant	Washer (5).E01_1	Host Local		2007-07-25 04:11:56 EEST
5-1-5-21-1177238915-616249376-839522115-1003			0	Billy Bob Brubeck	Washer (5).E01_1	Host Local		2007-08-04 04:14:13 EEST
5-1-5-21-1177238915-616249376-839522115-1002			0	SUPPORT_380945a0	Washer (5).E01_1	Host Local		2007-07-25 04:13:42 EEST
5-1-5-21-1177238915-616249376-839522115-1005			0	Mr Snow	Washer (5).E01_1	Host Local		2007-08-04 04:18:00 EEST
5-1-5-21-1177238915-616249376-839522115-1004			0	The Wolf	Washer (5).E01_1	Host Local		2007-08-04 04:15:03 EEST
5-1-5-21-1177238915-616249376-839522115-1006			0	Captain Hook	Washer (5).E01_1	Host Local		2007-08-04 04:18:11 EEST
5-1-5-21-1177238915-616249376-839522115-1008			0	Artimus	Washer (5).E01_1	Host Local		2008-02-13 03:13:46 EET
5-1-5-21-1177238915-616249376-839522115-501			0	Guest	Washer (5).E01_1	Host Local		2007-07-24 21:57:36 EEST
5-1-5-21-1177238915-616249376-839522115-500			0	Administrator	Washer (5).E01_1	Host Local		2007-07-24 21:57:36 EEST
5-1-5-18				SYSTEM	Washer (5).E01_1	Host Local	NT AUTHORITY	
5-1-5-19					Washer (5).E01_1	Host Local	NT AUTHORITY	
5-1-5-20					Washer (5).E01_1	Host Local	NT AUTHORITY	





Deleted User: Elvis



6. Devices Attached:

Listing								
USB Device Attached								
Table Thumbnail Summary								
Source Name	S	C	O	Date/Time	Device Make	Device Model	Device ID	Data Source
system			0	2008-03-10 10:11:21 EET		ROOT_HUB	4822481edd&0	Washer (5).E01
system			0	2008-03-10 10:11:25 EET		ROOT_HUB	4828ea0b8a&0	Washer (5).E01
system			0	2008-03-10 10:11:25 EET		ROOT_HUB	4830f8eea4&0	Washer (5).E01
system			0	2008-03-10 10:11:25 EET		ROOT_HUB	4831714c48&0	Washer (5).E01
system			0	2008-02-13 07:33:30 EET	Silicon Integrated Systems Corp.	Super Flash 1GB / GXT 64MB Flash Drive	0000000000C9BA	Washer (5).E01
system			0	2008-02-13 04:16:24 EET	Apple, Inc.	iPod Video	000A270014B302AB	Washer (5).E01
system			0	2008-02-13 07:22:08 EET	SanDisk Corp.	SDC22 Cruzer Mini Flash Drive (thin)	20041101101b4bc0091b	Washer (5).E01
system			0	2008-03-10 10:39:49 EET	SanDisk Corp.	SDC22 Cruzer Mini Flash Drive (thin)	20043512300C4E62C465	Washer (5).E01
system			0	2007-07-25 21:22:29 EEST	SanDisk Corp.	SDC22 Cruzer Mini Flash Drive (thin)	20043513310C7A22D0C8	Washer (5).E01
system			0	2008-03-10 10:07:30 EET	Trek Technology (S) PTE, Ltd	Product: 9005	10120515511949	Washer (5).E01
system			0	2008-03-10 10:11:22 EET	Linksys	WUSB54G v4 802.11g Adapter [Ralink RT2500USB]	582013f42e8b082	Washer (5).E01

7. Encrypted Files:

Encryption Detected									
Table Thumbnail Summary									
Source Name	S	C	O	Source Type	Score	Conclusion	Configuration	Justification	Comment
 X marks the spot.doc			0	File	Notable			Password protection detected.	Password protection detected.
 ALLSTATE CREDIT AGENCY.pdf			0	File	Notable			Password protection detected.	Password protection detected.
 How To Steal Credit Numbers.doc			0	File	Notable			Password protection detected.	Password protection detected.
 SLIST.doc			0	File	Notable			Password protection detected.	Password protection detected.

Online Behavior

Web Search	
Term:	credit card printer
Time:	2007-08-02 20:05:39 EEST
Domain:	tele-pak.com
Program Name:	Internet Explorer Analyzer
Source	
Host:	Washer (5).E01_1 Host
Data Source:	Washer (5).E01
File:	/img_Washer (5).E01/vol_vol2/Documents and Settings/Administrator/Local Settings/Temporary Internet Files/Content.IE5/index.dat

Message0004	
Subject:	Re: New Venture
From:	"John Washer" <chkwasher@comcast.net>
Date:	Wed, 11 Jul 2007 14:27:15 -0600
To:	"Wes Mantooth" <dollarhyde86@comcast.net>, "Mr Smee" <smee.rox@gmail.com>
Message Body	
Sweet!	
If that turns out to be too risky, a buddy of mine showed me how to rig the machines to keep the cards... Then we shoulder surf the pin and get the card when they leave!	

Message0020	
Subject:	I may have what you want.
From:	"Rasco Badguy" <bkidd@swbell.net>
Date:	Wed, 1 Aug 2007 12:40:54 -0500
To:	<chkwasher@comcast.net>
Message Body	
Skimmerman just called me to see if I had access to a card printer. Here is a photo of the one I have. It makes great licenses and ID cards. I just so happen to have 2 of these. You want one?	

Message0018

Subject: Re: Me and my woman

From: "John Washer" <chkwasher@comcast.net>

Date: Thu, 2 Aug 2007 14:13:27 -0600

To: "David Thomas" <skimmerman27@hotmail.com>

Message Body

Cool Man!

I scored this tech brief on debit card printing. I am working a new source for printers and mag writers...

Do you have any good sources for those?



Executive Summary:

In the course of the digital forensics investigation into the Washer case, we utilized two powerful tools, Autopsy and Registry Explorer, to analyze the digital evidence retrieved from the Washer.E01 image. The investigation focused on crucial aspects, including the time zone, operating system information, installed programs, documents and media, users' information, and emails.

Findings:

Time Zone: Through in-depth analysis, we determined the time zone settings of the seized hard drive, providing valuable insights into the geographical location and potential patterns of activity.

Operating System Information: Detailed information about the operating system allowed us to understand the system's configuration, which played a significant role in the investigation.

Installed Programs: We identified and documented the list of installed programs, shedding light on the tools and applications available to the user.

Documents and Media: Our investigation uncovered a wealth of documents and media files, offering potential evidence related to the case.

Users' Information: By examining user profiles, we gained critical information about the individuals involved in the activities under scrutiny.

Emails: The examination of emails led to significant discoveries related to the case, exposing communication patterns and potential connections.

Investigation Summary:

The investigation has yielded substantial evidence implicating John Washer in illegal activities. The digital evidence uncovered has linked him to the production of counterfeit credit cards. Through meticulous analysis of the retrieved data, we have identified communication with an associate known as "Rasco," revealing their involvement in the illicit activities.

Additional Insights:

One of the key findings from the investigation is the mode of communication utilized by John Washer with his associates. AOL instant messaging was identified as a prominent platform for communication, adding a critical layer of information to the case.

Associate: "Rasco"

In the course of our investigation, we managed to establish the identity of one of John Washer's associates, known by the name "Rasco." This individual's connection to the case suggests their involvement in the criminal activities under investigation.

Vehicle Identification:

Through our comprehensive analysis of media files, we were able to identify photos of "Rasco's" vehicle, providing potential leads for further investigation.

Conclusion

The digital forensics investigation into the Washer case, leveraging the potent capabilities of Autopsy and FTK, has led to a comprehensive and significant conclusion. Through the systematic analysis of critical digital evidence, including time zone details, operating system information, installed programs, documents and media, users' information, and emails, a compelling narrative has emerged, pointing to the involvement of John Washer in illegal activities related to the production of counterfeit credit cards.

Our analysis of the time zone settings provided valuable geographical insights, contributing to the reconstruction of events and potential locations of activity. Detailed documentation of the operating system information allowed us to grasp the system's configuration, providing crucial context for understanding the case.

The inventory of installed programs unveiled the tools and applications at the user's disposal, shedding light on their potential involvement in illicit activities. The plethora of documents and media files recovered during the investigation proved to be a vital source of potential evidence, adding depth to the investigation.

Meticulously examining user profiles allowed us to identify the individuals implicated in the activities under scrutiny, strengthening the case against John Washer. The examination of emails served as a pivotal element in unearthing critical evidence, establishing communication patterns and connections with associates, particularly with "Rasco."

Our investigation conclusively implicates John Washer in the production of counterfeit credit cards. The digital trails left behind provide irrefutable evidence of his active participation in these illicit activities. The discovery of "Rasco's" identity and insights into their vehicle further enrich the investigation, presenting potential leads for deeper probes into their involvement.

An intriguing aspect uncovered in our analysis is the use of AOL instant messaging as a primary communication platform among the individuals involved, offering critical insights into their modus operandi and communication dynamics.

The adherence to standard operating procedures (SOPs) throughout the investigation ensured the integrity and admissibility of the digital evidence, fortifying the reliability of our findings and conclusions.

Recommendations

Decrypt Encrypted Files:

One of the critical areas for further investigation is the decryption of any encrypted files or data encountered during the examination. Encrypted files may contain valuable information relevant to the case, and deciphering them could unveil additional evidence or shed light on the extent of John Washer's involvement in the production of counterfeit credit cards. Utilizing specialized decryption tools and techniques, the investigation team should prioritize the decryption process to uncover hidden details that could be crucial for a comprehensive understanding of the criminal activities.

Financial Transactions Analysis:

A comprehensive analysis of financial transactions, including bank records, online payment platforms, and credit card usage, is crucial to tracing the flow of funds and identifying potential money laundering activities associated with the criminal enterprise. Such analysis could provide vital clues linking financial transactions to the production and distribution of counterfeit credit cards. Utilizing specialized financial investigation tools and collaboration with financial institutions may aid in identifying suspicious transactions and uncovering the financial infrastructure of the operation.

Forensic Mobile Device Analysis:

Incorporating the examination of mobile devices linked to the suspects can offer essential insights into their activities beyond the confines of the computer systems. Forensic mobile device analysis may reveal conversations, location data, and call logs that could be instrumental in corroborating existing evidence and identifying additional associates or accomplices. This step can significantly enhance the investigation's depth and scope, providing a more comprehensive picture of the individuals' involvement and connections.

By implementing these recommendations, the digital forensics investigation can further its depth and breadth, uncovering additional evidence and potential associations crucial to building a strong case against the individuals involved in the production of counterfeit credit cards. The pursuit of decryption, in-depth communication analysis, financial transactions scrutiny, mobile device examination, collaborative efforts, and expert testimony preparation will

collectively contribute to a robust investigation and strengthen the chances of a successful prosecution, delivering justice and deterring future criminal activities.