

White Paper

Digital Evidence Preservation and Distribution: Updating the Analog System for the Digital World

July 2011

Digital Evidence Preservation and Distribution



I. Introduction

A majority of crimes committed today have a digital component, and criminal digital data is consistently growing in size and complexity. The amount of stored digital evidence is doubling at an estimated rate of every 18 to 24 months¹. US federal, state and local law enforcement agencies are mandated by law to retain digital evidence for the full life of a case, often indefinitely. But before it lands in court, all digital evidence has to be collected, stored and distributed.

Current digital evidence distribution systems often involve multiple manual steps; they are disparate systems that do not live up to the demands of our ever-growing digital world. As the volume of digital evidence continues to grow, it will become operationally and economically unfeasible for law enforcement agencies to perform essential data-processing tasks to acquire and analyze large data sets without tools and technologies that speed up the process².

In this paper, we present a solution that gives world-wide law enforcement agencies a streamlined system for preserving and distributing evidence, taking evidence found on disparate devices and exporting it to one, standardized and portable form of optical media for long-term preservation and distribution.

II. The Problem: Ineffective Digital Evidence Preservation and Distribution

Volatile preservation methods

Due to the sensitive nature of digital evidence, many legal regulations determine how this data should be stored, accessed and distributed. The details of these regulations vary according to specific courts or jurisdictions, yet one rule remains constant: digital evidence must be retained in its original format for an indefinite amount of time.

In order to comply with this standard, digital content is often offloaded to hard disk drives (HDD) for long-term storage. However, HDDs are a highly volatile means of storing critical content. Designed to be active only when powered on, HDDs are not meant to sit on a shelf for an extended period of time, nor are they built on technology that is certain to be viable for longer than three to five years. If data needs to be retrieved six or more years later, time, money and resources must often be spent on software and technology upgrades. HDDs are also prone to failures that cause data corruption or prevent content on the disk from being read. These failures can compromise stored content, and the costs of losing critical data far outweigh any up-front storage savings.

¹ Digital Evidence Analysis Tools. (November 5, 2011). Retrieved from <http://www.nij.gov/nij/topics/forensics/evidence/digital/analysis/welcome.htm>

² Digital Evidence Analysis Tools. (November 5, 2011). Retrieved from <http://www.nij.gov/nij/topics/forensics/evidence/digital/analysis/welcome.htm>

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Inefficient distribution processes

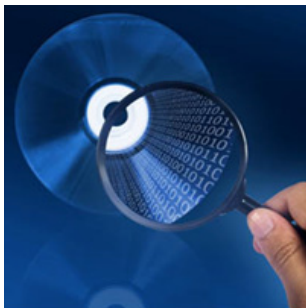
Throughout the life of a case, digital evidence is copied for distribution along the chain of custody—from officers and investigators to legal counsel and court judges. This task is often done manually—place a disc in a computer drive, copy data, label disc and repeat, or manually transfer files from a device to a portable hard drive. These are tedious chores that take the focus off of vital duties, creating a time-consuming, resource-draining process that leaves gaps for human error. Manually hand-written labels can result in inaccuracies and a lack of traceability, and they can often look disorganized, messy or unprofessional—setbacks that can hinder effective evidence dissemination, storage and retrieval. Copying data onto non-standardized forms of media also means that parties throughout the chain of custody may not have the capabilities or technology to read the evidence files. And because one case could potentially bring in evidence that is stored on multiple devices, this creates both technical and organizational problems.

III. The Solution: Automated Digital Evidence Processing

Diverse processes, volatile data storage systems and manual data copying and labeling create inefficiencies in the digital evidence processing workflow. An Automated Digital Evidence Processing solution is an optical disc-centric system that resolves these inefficiencies. By streamlining digital data export, preservation and distribution processes and automating tasks usually performed by personnel, an Automated Digital Evidence Processing solution improves the digital evidence workflow, exporting digital evidence to a universal, standard and optical media-based platform for long-term preservation and distribution.

Secure, reliable preservation

An Automated Digital Evidence Processing solution has a built-in archiving process that uses high-quality DVD/Blu-ray Disc™ (BD) media to provide secure data preservation and ensure reliable data retrieval and readability. High-quality DVD/BD media live up to the strict standards and regulations that surround digital evidence preservation and distribution. Once data has been exported to disc, it is ready for secure, long-term shelf archive—without the storage space and mobility restraints that are inherent in servers and hard drive archives. All that's needed to read the content stored on a DVD or BD is a corresponding player or drive; no proprietary software or hardware is necessary.



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Effective evidence distribution

With Automated Digital Evidence Processing, digital evidence data is inherently ready for distribution once it has been automatically exported and preserved on disc. Optical media is ideal for evidence distribution for three main reasons: 1) DVD and BD have superior storage capacities, allowing data exported from diverse devices to be stored on one central, secure and standardized form of media; 2) optical discs are universally compatible and portable—everyone in the chain of custody can open and view evidence files with a CD/DVD/BD player or drive—which makes the process from export to distribution logical and seamless; and 3) the surface of optical media is durable and printable, eliminating the need for human intervention and manual labeling. Plus, no other media available today has the standardized, long term playability and high adoption rates that optical media has.

Why Blu-ray is ideal for archive:

- A dual-layer BD disc can hold 50 GB of data
- BD have a 20-100 year lifespan
- BD has broad industry support, making it a highly compatible media
- BD is highly standardized, and its format is designed to stay technologically relevant for at least 10 to 15 years.
- BD is built on a secure, Write Once, Read Many (WORM) platform and has password protection capabilities
- BD technology is less prone to data loss and virus attacks than HDDs

A solution that works now and in the future

The growing amount of digital data will set the pace at which agencies must process, preserve and distribute their digital evidence. An Automated Digital Evidence Processing solution not only solves critical workflow inefficiencies and setbacks, but it puts agencies in control of their digital evidence, offering a scalable, secure and affordable workflow for managing future evidence, as well as processing current backlogs.

Automated Digital Evidence Processing Workflows

An Automated Digital Evidence Processing solution makes the transition from initial evidence export to distribution and archive seamless and straightforward. It is an intuitive, reliable solution that plugs directly into several areas of workflow, preparing agencies for the continued growth of digital data.

IV. Automated Digital Evidence Processing workflow

Automated Digital Evidence Processing Workflow is:

- **Adaptable:** From digital in-car video to audio monitoring, digital evidence can be ingested, processed, preserved and distributed with one system, working within established workflow. Hands-free operation gives personnel additional time to concentrate on core responsibilities, and drastically reduced officer interaction eliminates data inaccuracies and inconsistencies.
- **Intuitive:** The solution integrates with standard evidence and surveillance software, enabling officers to work directly in their established workflow to create and schedule export and archive jobs without having to be a systems or data storage expert. Once scheduled, the export and archive of content to DVD and BD for long-term preservation and distribution is fully automated.

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The solution is equipped with a built-in thermal retransfer printer, allowing evidence and case information to be printed directly to the disc with the same permanent technology used to print credit cards. Video metadata can be captured and automatically printed on the disc's surface for easy identification and enhanced traceability, and large data sets are automatically spanned to multiple discs.

- **Prepared:** The all-in-one solution enables agencies to be positioned for additional phases of growth, not only in terms of the amount of digital evidence that is here and expanding, but in regard to other areas of agency workflow. Once the solution is incorporated into the agency, a scalable system is in place that can augment other tasks by managing and preserving content such as forensic data, crime scene photos or miscellaneous administrative records. The solution can also expand to streamline other areas where surveillance cameras and devices are relevant, such as airplanes, helicopters, jails and interview rooms.

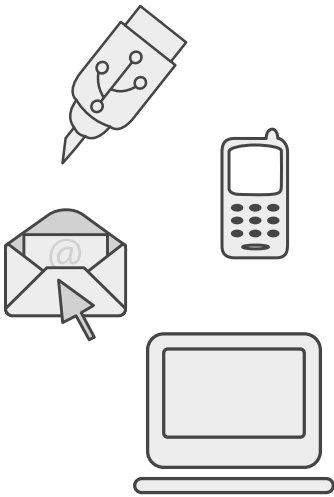


V. Conclusion

From PCs and laptops to mobile phones and tablets, devices are constantly expanding, and with each revolution, they offer more storage capacity and power. With the resulting volume of digital content, world-wide agencies are under a great deal of pressure to process, preserve and distribute data.

Volatile digital data storage and manual evidence processing systems are costly and unreliable; they leave gaps for inefficiency and inaccuracy and eat up valuable agency time and resources. In addition, disjointed digital evidence processing systems do not help agencies manage backlogs and incoming data, nor do they prepare analysis labs for the future. Instead of adding new processes to an already fractured system, agencies must find a way to streamline digital evidence workflows. Augmenting current systems will allow agencies to maintain their current structure and accommodate inevitable data growth.

Automated Digital Evidence Processing is a solution designed to improve and streamline diverse, manual processing tasks for the law enforcement industry, creating a seamless, intuitive and adaptable workflow from initial ingestion and export to distribution and final preservation. Automated Digital Evidence Processing is an intelligent system that gives agencies ultimate control over current backlogs and growing volumes of digital evidence. It provides a secure and cost effective way to store and share critical data, smartly positioning agencies for expansion into the digital world and ultimately enabling them to convict more criminals in less time.



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