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Study on Collecting Digital Evidence in Cyber Crime

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Abstract - The testing department must address the ability to review and compile verifications from physical evidence to electronic confirmation. There are some issues that need to be resolved over time with the electronic confirmation interval. Users learn the procedures and strategies for confirming cybercrime scenes, site evaluation, and web prosecution while evaluating cybercrime cases. Its basic principles are taken into account to eliminate electronic confirmation. PC case law is a relatively new field at this time, but standards have spread and continue to be created. To ensure that computerized approval is court-ready, ideally, adhere to currently accepted standards and practices and use proven programming. The main goal when evaluating data from a prediction PC is to leave it in a state comparable to what it was found. This actually predicts that when and where the event allows, plate image development should be used to create an exact copy of the hypothetical rigid circle, and that copy should only be used for evaluation. To recover data that may be covered by an opaque circle or may remain after it has been scratched or erased, the copy must be a bitstream image in which each element is repeated region by region from the master disk to the copy. .

Keywords - cyber, crime, digital, evidence

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INTRODUCTION

The two statements at the end of this segment are the key to why we conduct crime scene evaluations in law enforcement. The main statement comes from Edmond Locard, a French scientific expert of the 19th and 20th centuries. All measurable science is based on the explanation that when a singular enters the scene, regardless of the time interval, it gives up something and erases something from the scene. At the end of the day there will be an exchange of content that imagines a relationship to be made. As Paul Kirk stated in the ensuing proclamation, the typical finding is that fingerprints, tire and track prints, weapons evidence, and regular footage are being moved.

This verification review is performed by a predetermined measurable scientist in a controlled laboratory environment. In all cases, the drills available for possible emergencies coordinate the recovery and reliability of the confirmation during the evaluation interaction. The role of the crime scene rescuer in an assessment is to collect and separate forensic reviews. This interest in the trial can be easily achieved after security has been dispatched to the crime scene, documents have been updated, and findings have been shared with the crime scene expert. The undeniable information provided by the staff upon arrival at the scene of the crime cannot lead the experts to a specific selection verification process, they can coordinate the level of care protection provided for the issuance of programs at the scene of the crime. Rating authorities need to be familiar with these rating items and supervisors need to be concerned about the security of incidents?

Obviously, each of these does not make cybercrime cases synonymous with standard fraudster cases to find data extracts, examine objections, identify and protect objections, compile and repair reviews, examine evidence and legal identity and legal strategies, etc. How could we choose the philosophy and procedure score immediately after filing a case? Is the information integrated into the PC system? Could this information really be correct and be erased entirely? If the case that includes cybercrime can be successfully perceived... There is no doubt that the evaluation of cybercrime will represent a leap forward in addressing this large number of problems.

Define evidence

In general, evidence can be characterized as a means by which an alleged reality is revealed or refuted, the reality of which is subject to scrutiny. The legal significance of accidental evidence lies in its impact on the referee or jury during the preliminary round. There are three test classes:

Physical evidence (sometimes referred to as actual evidence) Includes material items that must be visible and in contact

Direct testamentary evidence The testimony of an observer who can explain realities based on individual experiences with the five characteristics.

Circumstantial evidence Not in terms of individual perception of the crime, but of perception or knowledge of realities that mostly contribute to an indirect end, but do not necessarily prove it

Overview of cybercrime investigation

The characteristics of cybercrime make new cybercrime cases uniquely comparable to standard criminal proceedings on the premise of political necessity, disclosure of leads, evaluation of the record, confirmation and protection in place, compilation and establishment of verifications, review of evidence, forensic analysis. identity and loading strategies. The advancement of network discovery is at the forefront of the development of new plastics masters in China and, alarmingly, around the world. It has high primary information requirements, sensitive knowledge, and a thorough nature of subject matter experts. Experts need strong planning and preparation for the breakthrough, review the progress of organizational development, update and promote the information structure as quickly as possible, and must participate in the evaluation and exercise at least a few times, constantly improve combat of real knowledge and everything works well development and techniques . The evaluation of cybercrime expressly puts in charge of public security, the judiciary, the state security and other final working organs that support the position of criminal investigation and the approval of policies to coordinate criminal evaluations of cybercrime, until the act, identification and sale of cases, including Screening, have approved tricks. Secret evaluation, location evaluation, acquisition and confirmation of fundamental distinctiveness, legal, bait and movement.

In total, there are three main requirements in the assessment to address and control cybercrime. Requirements for advancing one's assessment association Since cybercrime is an incredibly smart and cutting-edge misconduct, it is important to address sophisticated area techniques, such as egregious violations, that assess workplaces at all levels for detect such misconduct and tirelessly complete capacity planning. Strengthen the self-promotion of qualified workers. Also, the logical association must continually update its live team to meet the needs of a particular assessment. How to Assess Cybercrime Requirements The assessment mode is the best approach or routine that the investigator organizes on a case-by-case basis. Since cybercrime does not equate to normal misconduct, the clear strategy for detecting cybercrime is not exactly the same as the standard screening method. In this sense, we really need to study and synthesize how cybercrime is evaluated and dynamically structure many organizations for the current organization. Another type of evaluation is criminal and can actually detect cybercrime.

Understanding the Role of Evidence in a Criminal Case

The form, verification, obtaining and presentation of the confirmation associated with the corporate event is a legitimate interaction and is governed by the laws of the judicial district in which the verification is established. Therefore, analysts should familiarize themselves with the relevant guidelines. These standards are governed by rules and are usually organized in a document called the "Rules of Evidence". The standards of state courts may differ from those of state courts, and the rules for reviewing criminal grounds may differ from those of ordinary novices. In general, a verification must be verified, which means that when in doubt, a viewer must vouch for its authenticity. Extended verification may involve a viewer who has individual evidence information (for example, a person who awarded PC to the critic and viewed the report or recording alluded to in PC). It can also be the person available in an emergency who saw the evidence on the screen while noting the incident, or an expert who checked the computer and confirmed after entering it. Potentially the main part of wanting to present evidence in court is determining which communications certify their presence and authenticity, describe the status of their disclosure, and certify that they have not been mistaken.

Collection of digital evidence

An organization or other IT staff member is , as far as possible, the first person to learn about cybercrime in a corporate environment, and the IT Incident Response Group (assuming the association has one) will find the means to stop cybercrime. Ongoing misconduct and "freezing" the crime scene under the watchful eye of staff to overwhelming approval of the policy. Indeed, even after police intervention, the most common means of early proof of a social event tends to affect some rallies, with the first responders being official authorities or security agents who appear first on the scene. . These people are in charge of identifying the crime scene, defending it and preserving the evidence. Investigators or a passionate congregation, likely to show some level of initiative, coordinate the pursuit at the crime scene , and ensure the integrity of the control. Trained and experienced locators who are called upon to process the evidence and are forced to motivate eccentric confirmation (discussed later in this part), duplicate plates, and arrange transportation control (including facility shutdown and packing, name and registration confirmation).

OBJECTIVES

1. Study to understand the role of evidence in criminal proceedings
2. Cyber Crime Scene Investigation Study

DETECTION METHODS FOR CYBER CRIME CASES

Cyber crime scene protection

An organization leader or other IT staff is often the first person to learn about cybercrime in a corporate environment, and the IT Incident Response Group (assuming the association has one) will find hidden ways to stop the bad news. continuing behavior. and "freezing" the crime scene under the watchful eye of the overwhelming policymaker. To be sure, even after the police takeover, the most common means of advanced detection of social events usually involves a few gatherings, first responders, who are the authorities or official security agents who appear first. The idea of reclaiming the crime scene will be quite influential when it is possible to collect criminal evidence, when the reality of the crime still lingers there and the plan is soon chosen. Cybercrime is greater than the truth of ordinary violations. Sometimes it is usually free of geographical restrictions and can even be cross-border. It is inconvenient to determine the scene. Also, considering that the target of the criminal is the thin electronic data, the PC system, especially the organizational structure, has a dark plan and the criminological work is really amazing and a random move could inspire the annihilation of the evidence. Specific strategies for shutting down the cybercrime scene include the following:

The case of destroying the actual properties of the PC system or perhaps the actual PC and its space is undeniable.

Taking into account the information of the case, from the examination of the points of view of the criminal hypothesis, it suggests the level of information of the PC, level of information, etc., examines the possible perpetrators and the PC by crimes, then selects crime scene .

Crime scene is viewed as indicated by the contents of the Facility Log or PC Information System Investigation Log.

The nature of the crime, the nature and strategy of the various cases

Focus on the PC who identified the problem, send him to various locations and supplies related to the organization, and choose the crime scene based on the circumstances of the case. Aside from hacking cases, most cybercriminal killings take place within staff (sometimes even among people helping with screening). Thereafter, it is plausible to coordinate the evaluations taking into account the PC executives and related merchants in the selection units. The person, then the person at the scene to choose the crime scene.

At the crime scene. These people are in charge of identifying the crime scene, its defense and verification. Analysts or an assembly of experts tasked with instilling a measure of authority to coordinate a crime scene search and be aware of the accuracy of the review. Trained crime investigators and experts called in to perform the verification and responsible for ensuring outlandish confirmation (discussed later in this part), reproduction of license plates, and arranging evidence for transportation (including facility closures and packaging, name and judgement record.

Cyber crime scene investigation

Scene assessment is an activity in which law enforcement agencies continually review the crime scene in accordance with policy to obtain statements of the case and collect significant evidence. General testing procedures for cyber crime scenes:

Focus on the issue, rate and review the site, and choose the site and review level

Complete sketch progress as shown in the site environment and case statuses . In general, the PC is used as a center to focus on the periphery. For larger areas, crack, crevice, contour, and crevice strategies should be performed during this time.

Evaluation below and selection of various statements Under the explanation of ensuring that PC information is not destroyed, there are questionable traces of violations associated with misconduct, e.g. B. Fingerprints, fingerprints, device marks, ink, oil, dust, dirt, hair, fiber, etc. Focus on various authenticity checks, especially on various reports, e.g. B. System Manuals, PC Job Logs, PC Printouts, Inventory Sales, Freight Orders, Warehouse Receipts, and Worn or Used Paper, Captured Parts, Cleaned or Altered Records, etc. circles, USB drives, tempting tapes, tempting discs, optical circles, phones, etc. If the effort is reluctant to give up, it will usually be copied, and the loss will use the copy. The expert must focus on the main point, which is the proof.

Cyber Crime Online Tracking

Assessment of online violations is generally highlighted by Internet access IP addresses, Internet access logs, and Internet access. For cases of network interference, when a powerful Intrusion Detection System (IDS) is present, it is surprisingly useful to thwart and trace the interference if the client has a UNIX or Windows hive.

Especially when the structure of the IDS recognizes a frightening event, that is, it expects the organizational system to be linked to the persecution; it must be checked and adapted in time:

In any case, separate the structure of the organization. Because the organization is essential to check the environment before making a judgement More fundamentally, the expectation that the intruder is on the web right now will continue to generate excitement from the head of the organization.

Copy all log files, including the IDS log itself and the event log (Windows NT tree) or SYS log (UNIX approach) from your organization's system. Obviously, there is a normal problem with this technique, in other words, today's intruder can certainly cover his tracks by deleting the records. Also, it is exceptional to note the information published in the log information of a large number of log files.

In fact, find the time of the last exceptional log entry (either in the Windows NT master inventory or UNIX master list), compare it to the log file recorded by your organization's regulator, and examine the log for disk request usage .

Protection of Electronic Evidences

In the context of verification protection, it is common to know exactly where and under what conditions evidence is collected at a crime scene . After all, it is normal to know the accuracy of the confirmations collected. The reliability of the verification lies in the discernment work of the police to guarantee the confirmations. After identification, selection of confirmations, they send the computerized confirmations to the laboratory for evaluation. Figure 1 shows the cycles used for protection or recognition. At this point there is advanced protection and true affirmation. EDP confirmation is based on the essential overview of the confirmation interval

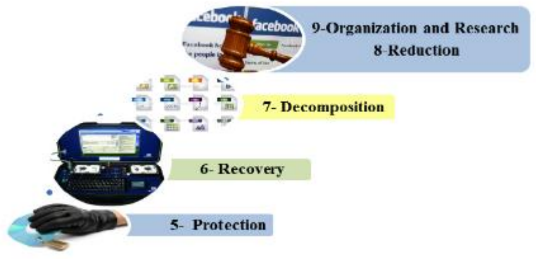

Fig. 1. Protection of electronic evidence

Recovering Digital Evidence

In some cases of PC misbehaviour, the commit you really need is placed immaculately on the hard drive (or some really open removable media), with separate recordings to show its contents. In several cases, the specialist is not so lucky. Cybercriminals may learn that the trap data has been "interrogated" and deleted, or perhaps even planning or deleting the ring. Some particularly clever cybercriminals use complex techniques to hide data in unlikely or up-to-date environments. Often the data that would be useful to the expert is not discarded at all, not the PC client information. However, a lot of advanced data is supported in regions, e.g. B. Backup reports, swap/page logs and temporary (temporary) files and "extra" data having "unallocated" disk space "granted" space in packets larger than the records they contain and "opens" between games or regions. In the following sections, we review and encourage some of the habits experts use to retrieve data that is not immediately obvious, while examining the structure of the registry, which could prove crucial in building a hooligan case.

Deleted files

Several PC clients including cyber criminals believe that deleted records will be erased from hard circle. Anyone who considers himself a PC expert has heard on TV and radio that once Windows "Trash" is deleted, the recordings are gone from the drive. As we have seen, this is fundamentally wrong. Deleting a record does not delete the substance of the file; Basically, it removes the pointer to that record from the file allocation table (FAT), main file table (MFT), or other arrays used by the operating framework to identify the location of a particular report on disk. Data is placed on the circle in groups, which are units that contain a specific number of pieces. Since the parts of a record are not usually arranged in congruent groups on the actual circle, but can be distributed in discrete areas throughout the record, removing the pointer makes it difficult to play the file at that point. It is not an unlimited approach.

The moment the record is cleared, the area of the disk that it is supported on is taken offline as unallocated space, meaning it is available when new data needs to be formed. Either way, on a colossal disk, it can take a long time for that particular part of the circle to be used to form new data. In the meantime, the old data is still there and can be restored if the examiner has the right tools. A new plastic plate that has just come out of the new plastic plate is considered "stainless steel" or absolutely no filler, but it is actually full of configuration characters, which are repeated characters used by the testing machine at the manufacturing plant. Assembly to be created When records and lists are created and saved to disk, they overwrite the characters in the directory. Even when records or lists are deleted, the sets in which they are supported are not rearranged until new data is added. Disk scheduling does not delete this data. Regardless of whether or not the circle is split, the data will continue to exist until those collections are overwritten.

Computer Forensic Resources

Computer criminology is a fairly young field whose standards are rapidly being established and progressing at this stage. There are countless resources available to criminology experts for secure PCs. Cybercrime inspectors who need to expand their knowledge, corporate IT staff excited to have some knowledge here, and crime investigators who need to find a way to monitor computer evidence turn to many planning, teaming, and programming companies Find . to open . Specialists who like to "outsource" some elements of the computerized verification assessment will notice several commercial assistants who perform imaging, data retrieval, and related tasks. Many of these organizations use people who can testify in court as expert eyewitnesses. Some memberships and affiliations provide white papers, articles, and various sources of information to keep the measurable PC workforce up to date with the latest developments in this space. Shard chaining provides a model for a subset of these resources.

Capturing Image

In PC forensics, image (measurable image) is the name of the exact copy taken for evaluation. It is extremely important to keep the copy so that all the parts are finally merged on the hard drive (data stream protection). At the end of the day, the substance of the copied license plate would be exactly the same. There are two methods to get the image. One is to get images through equipment; the other is to get images through programming. The team 's imaging devices obtain the test image by following the imaging procedures in its built-in framework by extending a real data relationship to the primary verification.

The advantages of these things are that they are not needed on any PC and are used to get images on the site. The most common way to train the main demo is hampered by building block components. Some images of the equipment received by the equipment can be saved as follows:

- image master
- Tableau Forensic Replicator
- digital intelligence
- my key
- Hawk
- Snapshot 7020
- The king of data copy
- beecube

Write blocks

Write blocks used for write security are software or hardware elements created to acquire and search for images while maintaining evidence reliability. In case the write lock is not used, malicious software such as viruses, Trojans, etc. During the imaging process, the PC may be attacked and the information may be reassembled based on the evidence and will release its gravity.

Construction of cybercrime investigation and evidence collection model

Cases are presented through heavy camouflage and PC-produced reality. Despite the standard methods for evaluating misconduct, the evaluation must also change evaluation considerations, explore new evaluation methods, and adopt new evaluation standards for the organization. The Multidimensional Forensic Model (MDFM) reflects the scope of the long-term legal cycle. Today, depending on actual measurable interaction, advanced crime scene investigations can return to the level of each facility; Organized thought recommends that the criminological cycle choose the "jurisprudence system" and the importance of the "information base" according to "scientific needs"; Even more rarely, the legal cycle is divided between the card validation level, the verification collection level, and the basics.

CONCLUSION

Verification is the support of all criminal proceedings, including cybercrime cases. The scope and security of advanced verification differs in many ways from the strategies that law enforcement officials are accustomed to using for traditional types of evidence. Computer evidence is a sensitive, tempting, or electronic representation of information. Its authentic design doesn't immediately reveal its bias: Cybercrime investigations are modest new territory at the moment, but the standards have expanded and are evolving. To ensure that computer evidence is admissible in court, ideally, adhere to currently accepted standards and practices and use proven programming. The primary goal in coordinating a data analysis of a suspected PC is to leave it in a state comparable to that found. What this really means is that whenever and wherever this happens, the circular development of the image should be used to create an exact copy of the theoretical rigid plate and that copy should only be used for evaluation. To recover data obscured in the dark circle environment or left behind after deletion or destruction, the copy must be a bitstream image, where each piece is recreated region by region from the master disk to the copy. Ideally, this copy should be made while accessing the nearby PC before shutting down the PC. In the meantime, you should take steps to save or backup irregular data that is lost when your PC is turned off. If something like a copy was made, the first one can be safely stored in the Verification Capacity or the Evidence Room until needed. The protection chain must be maintained throughout the cycle. The copy circle can be dissected to provide evidence of misconduct. This evaluation must not only deal with recognizable records within the file structure, but must also participate in the mission of including data that is not indisputable and that the PC client is unlikely to know actually exists on the disk. This task requires excellent measurable programming that can be presented on a specially designed criminology workstation.

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