

Forensics: Accounting & Technology  
**Effective Identification, Efficient Retrieval**  
2005

Grant Thornton 



# Grant Thornton **at-a-glance**

Through offices in 110 countries, the partners and employees of Grant Thornton member firms provide personalized attention and the highest quality service to public and private clients around the globe.

Grant Thornton 

## As you focus on the growth and profitability of your business, you face a number of challenges...

- complex regulatory environment
- need to address business risk
- constant margin pressure
- greater need for transparency
- expectation of quality
- demand for innovation
- expansion across borders
- fierce global competition
- sophisticated and knowledgeable customers
- competition for key talent
- cost and availability of capital
- potential mergers and acquisitions

## To help you address these issues, Grant Thornton provides a wide array of services...

- assurance services
- tax compliance & consulting
- business advisory
- international
- mergers and acquisitions
- corporate finance
- technology risk management
- forensic accounting
- valuations
- compensation and benefits
- strategic planning

**South Florida office**  
954.768.9900

[www.GrantThornton.com](http://www.GrantThornton.com)

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## STATISTICS

	Global	United States
<b>Revenues</b>	\$2.1 billion	\$635 million
<b>Staff</b>	18,460	3,555
<b>Partners</b>	2,026	368
<b>Offices</b>	540	49

## Grant Thornton serves clients across a broad group of industries including...

- consumer and industrial products
- technology
- financial services
- not-for-profit
- health care
- hospitality
- global public sector
- government contractors
- construction
- real estate

## Why Grant Thornton?

### Highest J.D. Power and Associates Ranking

J.D. Power and Associates ranked Grant Thornton LLP “Highest Performance among Audit Firms Serving Companies with Less Than \$1 Billion in Revenue.”\*

Measuring service quality is important to us, so our professionals spend up-front time defining service expectations and establishing clear channels of communication.



### Understanding your industry

Grant Thornton professionals not only understand the broad issues that business leaders face, but also the industry trends that provide context for strategic decision making.

### Access to resources

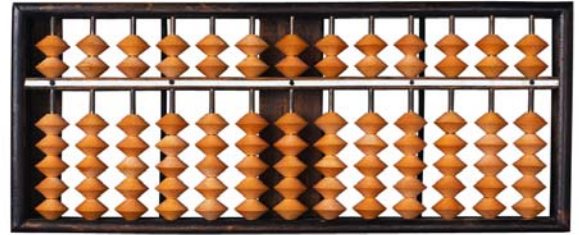
When accounting, tax or business issues arise, you want quick access to experienced resources and technical experts on demand. At Grant Thornton, access is quicker and more direct and turnaround is faster.

### International strength

Grant Thornton International member firms are located just about anywhere you want to go. Whether you are in Houston or Hong Kong, the people of Grant Thornton provide the high quality service and personalized attention our clients have come to expect.

\* J.D. Power and Associates 2004 Audit Firm Performance Study<sup>SM</sup>. Study based on responses from 1,007 audit committee chairs and 944 chief financial officers. [www.jdpower.com](http://www.jdpower.com)

# Grant Thornton -- South Florida



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Grant Thornton is the leading accounting, tax, and business advisory firm serving middle-market, entrepreneurial companies. It is the U.S. member of Grant Thornton International, with \$2 billion in revenue. Through operations in 110 countries, Grant Thornton International services clients in 540 offices worldwide.

The South Florida practice is comprised of the **Miami and Weston offices**, which count for two of Grant's 49 locations in the United States. Grant Thornton's South Florida serves clients in numerous industries including hospitality, wholesale and retail distribution, real estate, financial, telecommunications, and e-commerce. Like all Grant Thornton offices, the South Florida partners, managers and staff work in cross-functional teams, pursuing an integrated approach to provide broad-based business advice, tapping into the firm's expertise locally and nationwide.

## International Business Center Miami

Global tax professionals at the Grant Thornton International Business Center (IBC) in Miami can address such issues as currency risks, financial statement translation, and capital formations through public or private channels.

## South Florida Partners

### Doug Gawrych

Managing Partner/South Florida

### Mitchell Less

Partner/Assurance Services

### Scott Mager

Partner/Assurance Services

### Mark Margulies

Partner/Tax Services

Director/Technology Industry Practice

### John Messer

Partner/Tax Services

### Ken Meuser

Partner/Assurance Services

### Gerry Pombo

Partner/Assurance Services

### Gregg Rusk

Partner/Assurance Services

Director/International Business Center  
Miami

### Jim Spencer

Partner/International Tax Services

### Shelley Stein

Chief Operating Officer

### Maria Yip

Partner/Economic Advisory Services

## South Florida Practice Statistics

Location: Miami, Florida

Founded: 1969

Revenues: \$17 million

Total Personnel: 100

## Grant Thornton National Statistics

Headquarters: Chicago, Illinois

Founded: 1924

Revenues: \$485 million

Total Personnel: 3,280

## Grant Thornton

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**Maria M. Yip, CPA**

**Partner, Forensic Accounting & Investigative Services**  
Grant Thornton LLP, Florida

**Qualifications and  
Overall Experience:**

Ms. Yip is a certified public accountant in the State of Florida and certified fraud examiner. Ms. Yip has provided litigation support and forensic accounting services to attorneys, bankruptcy trustees, receivers, and state and federal governmental agencies for the past twelve years in complex matters involving economic damages, white-collar crime, fraud, embezzlement and bankruptcy litigation in the United States, Latin America and the Caribbean. Ms. Yip has also served as an expert witness in Federal bankruptcy court, State court and international arbitration matters. Ms. Yip also serves as a Chapter 7 bankruptcy trustee and as a court-appointed examiner.

**Experience:**

Ms. Yip has provided litigation support and forensic accounting services to counsel for publicly and privately-held companies, and receivers for governmental agencies including the Securities and Exchange Commission, Commodities Futures Trading Commission, Federal Trade Commission, and State of Florida Department of Insurance and Rehabilitation in matters involving financial and economic issues. In addition, Ms. Yip has provided litigation support and forensic accounting services to counsel for companies in bankruptcy, bankruptcy trustees, and liquidating trustees.

Litigation support services provided have included detailed review and analysis of financial records, assistance with discovery, and preparation of damage analyses, written reports, demonstrative exhibits and testimony. In bankruptcy matters, litigation support services have also included identification of preferential transfers and fraudulent conveyances, analyses of defenses to preferential transfers and fraudulent conveyances, and preparation of solvency analyses.

Forensic accounting services provided include investigations into alleged accounting irregularities, fraud and defalcations. These services include conducting interviews of personnel, detailed review and analysis of financial records and transactions, analysis of impact on financial statements and reliance by third parties, and preparation of written report.

Industry experience includes financial services and insurance, distribution, consumer products, utilities, construction, real estate, aviation, healthcare, and telecommunications.

**Education:**

Florida International University, Bachelors of Accounting

**Certifications:**

Certified Public Accountant, State of Florida  
Certified Fraud Examiner, ACFE

**Professional  
Affiliations:**

American Institute of Certified Public Accountants  
Florida Institute of Certified Public Accountants  
Association of Certified Fraud Examiners (ACFE)  
South Florida Chapter of ACFE - President  
Association of Insolvency and Restructuring Advisors

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**Allen J. Genaldi,  
CPA, CFE**

**Director - Forensic Accounting & Investigative Services**  
Grant Thornton LLP, Florida

**Qualifications:**

Mr. Genaldi is a Director in the Forensic Accounting & Investigative Services practice providing consulting and expert witness services in the area of commercial litigation, forensic accounting and fraud examination, and corporate investigations. Mr. Genaldi is a certified public accountant, certified fraud examiner, and a member of the American Bar Association.

**Overall Experience:**

As a former State Law Enforcement Special Agent and a practicing CPA and CFE, Mr. Genaldi has over twenty-five years experience in investigating major white collar criminal offenses including fraud, embezzlement, racketeering, corruption and foreign corrupt practices, money laundering, anti-trust, health care fraud, securities offenses and complex criminal organizations.

Mr. Genaldi's experience includes management of sensitive government and private investigations of political figures or public officials as well as major industry clients. Among others, the subjects of these investigations have included government contractors, academic medical center officials and programs, banking and monetary entities and securities dealers & brokers. Mr. Genaldi has also consulted with clients in various international markets in the development of fraud & abuse detection and control programs related to the internet and health care.

**Education:**

University of South Florida, Bachelors of Accounting

**Professional  
Affiliations:**

American Institute of Certified Public Accountants  
Florida Institute of Certified Public Accountants  
Association of Certified Fraud Examiners  
American Bar Association – Criminal Justice and Health Law Sections  
Boston Bar Association

**Published Work:**

"Fraud in Foreign Operations," Internal Auditor, August 2002. Awarded Outstanding Contributor Award by the Institute of Internal Auditors.

"Terrorism in Florida, a Law Enforcement Response," The Florida Police Chief, March, 1987

"The KKK in Florida" The Richard Shanks Show, WMTV, Lakeland, FL May 20, 1987

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**Robert D. Moody,  
CISA, CISM**

**Director, Forensic Accounting & Investigative Services**  
Grant Thornton LLP, Florida

**Qualifications and  
Overall Experience:**

Mr. Moody holds certifications in the area of information systems auditing, technology security, and computer forensics. Mr. Moody has provided assistance to public and private companies, law firms, state and federal agencies as well as law enforcement. Mr. Moody has worked on a wide range of issues covering items such as employee malfeasance, embezzlement, ponzi schemes, destruction of evidence, computer hacking, identity theft, and money laundering. Mr. Moody has served as an expert witness in civil court and civil arbitration matters.

**Experience:**

Acquired data from more than 100 hard drives and recovered deleted e-mail, documents, databases, and bank records that help identify the location of \$MM of dollars belonging to investors.

At the request of the United States Secret Service, assisted agents in acquiring data from a computer system that had been purposefully altered to prevent such acquisition.

Working on behalf of the US Department of Labor and the Tennessee Receivers office, assisted in the physical and electronic shutdown of an organization, secured all data and prepped site for the civil and criminal investigations to follow.

Provided initial incident response to client who was attacked by recently terminated employee. As part of the response, the environment was secured, the breach point was secured, the site was prepped for the criminal investigation to follow..

Tourism client on site for 2002 World Cup suffered a catastrophic loss of its database and all client data. A forensic examination of the data followed. The recovered data and file structures were made part of a new-reconstructed database and client was returned to operating efficiency.

On behalf of a local government agency, a due diligence review of the self-funded insurance plan ensued. The review determined that the administrators of the plan was not operating in the best interest of the agency or its insured. The review uncovered behavior that had resulted in the loss of \$MM of dollars to the agency.

**Education:**

Nova Southeastern University, Bachelor of Science  
St. Thomas University School of Law, Juris Doctorate

**Certifications:**

Certified Information Systems Auditor, ISACA  
Certified Information Security Manager, ISACA  
Certified in Computer Forensics, University of Oregon

**Professional  
Affiliations:**

Information Systems Audit Control Association  
Miami Electronic Crimes Taskforce

Accounting irregularities and financial frauds don't leave footprints. But our **economic advisory services** professionals can reveal the trail of deceit to you and lead you to the truth ...



... through the application of investigative accounting and financial fraud detection expertise and experience to internal corporate investigations of allegations of accounting discrepancies and financial frauds.

#### Internal Corporate Investigations

Our team of CPAs, Certified Fraud Examiners (CFEs), Certified Internal Auditors, JDs, former FBI agents, investigators, computer auditors and technology experts can marshal all the brainpower corporate directors, audit committees, boards of directors, special committees and in-house and outside counsel need to conduct a thorough and cost effective internal corporate investigation of accounting and financial issues

Grant Thornton serves tens of thousands of middle-market clients – both public and private – through office in the United States and in 110 countries worldwide. Our forensic accountants and investigators can draw upon this professional network to conduct investigations at your corporate headquarters and/or at any of your operations around the globe.

#### Accounting Irregularities

Whether you call it “financial statement fraud” or “earnings management,” accounting irregularities have become a troubling fixture in modern business. Our forensic accountants bring a unique blend of investigative accounting and financial report skills to investigating, quantifying, and if necessary, to preparing and presenting our findings to a tried of fact or regulatory body.

#### Financial Fraud

A trusted and respected employee or service provider who appears by all outward signs to be an outstanding citizen of the community may have perpetuated a financial fraud on your enterprise. The crimes they commit may be sophisticated and well concealed, involving elaborate and methodical deception. These crimes can include kickbacks from vendors, payments to fictitious vendors or ghost employees and money laundering or fraud on an international scale. Undetected, they can continue perpetrating these illegal activities for years, increasing the financial loss and the legal exposure of the organization, its officers and directors.



Suspicious or reports of irregularities are causes for concern. If a loss is detected, management needs to know the extent, the responsible parties and the best possible avenue for resolution. Grant Thornton has a dedicated team of experienced professionals who investigate fraud and other related illegal financial activities. Our professionals work full-time performing fraud audits, fraud investigations and related assignments.

For more information, or for an initial discussion of your situation, please contact:

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Grant Thornton's **economic advisory services** make the most of the accountant's talents while maximizing attorney time for the legal aspects of a case



Grant Thornton's litigation consultants are experienced in offering services in accounting (financial and tax services and statistical evaluations/analysis) and information management (electronic production and analysis of voluminous data). You can depend on objectivity, procedural thoroughness, and maximum confidentiality. Also, you can count on us to be cost-sensitive while maintaining a high level of effectiveness. The quality of the work — the vital financial interpretations and projections that produce insightful and assertive depositions, evidence, and testimony — is supported by the time-proven credentials of our professionals.

**Forensics services:**

- Assistance with discovery, including deposition preparation
- Analysing/critiquing other experts' reports
- Technology assistance
  - Management and analysis of massive amounts of data, complex financial modeling, data extraction
  - Research/library capabilities to support/backstop attorneys and smaller CPA firms regarding background information and/or litigation assignments

- Damage calculations in all types of litigation
  - Lost profits
  - Patents/trademarks (including royalty calculations)
  - Post-acquisition analysis
  - Opportunity costs
- Investigation of allegations related to fraud and/or irregularities
- Bankruptcy/workouts/turnarounds
- Business valuations
- Expert testimony and reports
- Alternative dispute resolution

**Types of cases:**

- Civil disputes
- White-collar crime
- Bankruptcy
- Forensic accounting — litigation and investigation
- Business valuations
- Data management/analysis

For additional information please contact –

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# Economic Advisory Services

## Computer Forensics

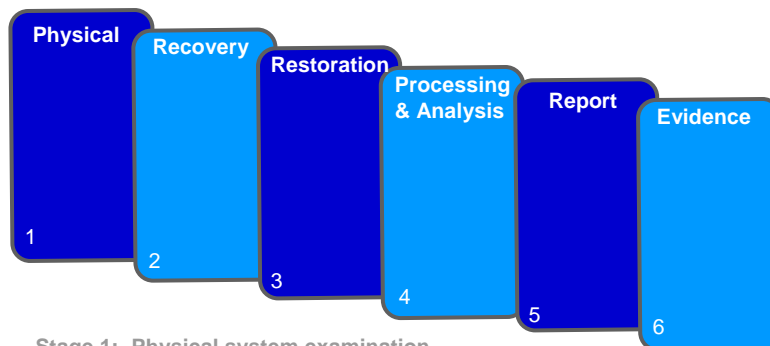


### Computer crime

The rapid growth of electronic commerce and use of technology has, in contrast to its many advantages, led to new ways of committing and facilitating crime. In the investigation of such crimes the best evidence is often found within computers and other electronic devices. Due to the volatile nature of electronic data, it can be difficult to retrieve evidence without altering or destroying it. Given the complexity of the modern Information Technology environment, evidence can often be overlooked without a thorough understanding of the underlying system.

### Computer forensic model

Our specialist computer forensic team has developed a six-stage methodology, compliant with internationally recognized forensic computing standards. The model incorporates the seizure, reconstruction, analysis and presentation of all types of computer based evidence.



Stage 1: Physical system examination

Stage 2: Forensic recovery of all areas of computer filesystem to non-volatile storage medium

Stage 3: Restoration of data to forensic workstation

Stage 4: Analysis of data and filesystem processing

Stage 5: Production of a report identifying processes used and findings

Stage 6: Production and presentation of evidence

### Computer data recovery

Techniques and systems used by our investigators provide total data integrity and ensure that data retrieval is performed using non-invasive standards, which can be applied for a variety of clients from both the public and private sectors. Our investigators have in-depth practical experience in the retrieval of deleted, protected and corrupted data.

### Specialist computer investigations

In an environment where IT plays a critical role in business, the ability to identify and investigate incidents that occur on or through those systems is crucial. Grant Thornton has established a team of highly regarded computer crime investigators who can assist you in dealing with an IT security incident.

# Grant Thornton's economic advisory services division offers services in **computer forensics**.

## Frequently asked questions



### What is computer forensics?

Computer forensics is a process, not a thing. It is the process of acquiring data from computers and other electronic sources; mining that data for specific information requested by the client; providing the data in a clear, concise and understood format.

### When should computer forensics be used?

The use of computers has become common place throughout our personal and business lives. Almost any type of engagement may benefit from the application of computer forensic skills. If electronic information is important to your assignment, then it is probably important enough to involve computer forensic experts in either obtaining information or verifying that you did receive everything you have requested.

### What is it that you do when you are engaged by a client?

Once engaged, our work will usually proceed in a series of phases. These phases usually take on the following form:

- Planning and preparation
- Acquisition
- Data preparation, indexing, and cataloguing
- Key word searches and data mining
- Deliverables
- Refinement / Additional requests

### Can you explain the planning and preparation phase?

This is the most important part of the process. We find that, often, this is the part in which the client or other interested parties fail to spend any significant amount of time. During this phase, it is important that the acquisition team gain a clear understanding as to what the case/engagement is about (details are good). In addition, the target systems (computers, PDA's, cellular phones, fax machines, copiers, etc.), need to be identified and certain details need to be disclosed.

The last component of this phase is that all parties should understand and agree on the scope of work to be performed. Also, when and what can be expected during the life of the engagement.



## Can an estimate of time and/or expense be provided during the planning and preparation phase?

Any estimate in this business needs to start with the caveat “if something can go wrong, it will.” Based on this simple but often true statement, providing any estimate of time and or expense is not in anyone’s best interest. When problems arise, the estimates have a way of making the client unhappy and making the Grant Thornton computer forensic team miserable.

If a guide is needed, the following can be used:

- **Cost:** All work is on a time and material basis, plus reasonable expenses. We will be happy to report progress as we proceed; including periodic reports of how much time has been incurred, so that you and/or the ultimate client can keep track of what is being spent.
- **Travel:** We bill time and expenses relating to travel.
- **Planning and Preparation:** Depending on the size, complexity, and location of the work — this can be accomplished in as little as 2 hours or take as much as week.
- **Acquisition:** Acquiring a system is fairly straight forward. If we acquire the image(s) on a target site, we bill time for the time we are on site. If we acquire the single image in our lab, the time can range between 45 minutes and 8 hours depending on the size of the hard drive, type of drive, antiquity of the drive, issues with the hard drive, and other unforeseen events.
- **Preparation, Indexing and Cataloguing:** This phase will require a large amount of time but will not incur huge costs to the client. During this phase, the acquired data will be verified for a variety of things, organized, grouped, prepped for indexing and cataloguing, and lastly placed on one of our systems for the indexing and cataloguing stage.
  - *At this point, all issues and priorities must be known or additional time and cost will be incurred later.*
  - *The indexing and cataloguing of an image is an intensive computer process. It requires one computer system to be dedicated full time during this process. This process can take as little as 8 hours or it can take as much as 3 days. Please note that this time is not determined by an individual, it is determined by the number of files, size of the hard drive, and the other issues affecting the acquisition phase. As a general rule, the process takes approximately 1.5 to 2.5 hours per 1GB of data. (A 40GB hard drive can take between 60 and 100 hours to index and catalogue the image.) **Now the good news – the majority of the time involved in the process is not billed to you the client. The client will be billed for setup and monitoring for the process, a few hours per image.***
- **Key word searches and data mining:** This phase is where it all comes together. It is also the most time consuming and costly component of the process. The client will work with Grant Thornton’s computer forensic team to produce a search term – extraction list. This will be our guide during the process. This list will then be applied to each image/index - catalogue. The following items should provide some light on this process:
  - Each image / index – catalogue is processed separate from all other images. This means that a 10 term search list being applied to 10 images is the equivalent to applying a 100 term search to 1 image. *Also keep in mind that there will be some overhead in booting up the 10 drives vs. the time it takes to boot up 1 drive.*
  - Search terms need to be specific and as relevant as possible. The reason for this is that the search process will apply the specific term to every file and/or space on the image. Consequently, generic or abbreviated terms will result in a large number of false hits.
  - A hit can be defined as the search term appearance in either a file or file remnant. In the past, we have seen hits for a single search term to exceed 1 million and we have seen the file count for a single search term to exceed 10 thousand.
  - Every hit (false or otherwise) will need to be reviewed and have its relevance determined. In other words, the fewer false hits – the better.
  - All of this translates to time. The more specific the terms and instructions for the types of specific data being sought, the fewer false hits will appear and the less time it will take to review the search results.
  - In general, one image, having approximately 10 – 15 terms applied against it, can be searched and the results reviewed in about 12 to 16 hours.

➤ **Deliverables:** This phase is dedicated to extracting and exporting the relevant files from the search phase. Creation of deliverables occur as follows:

- Exporting the relevant files to a local directory. This process can be somewhat lengthy, depending on the number of relevant files associated with each search term. We have seen the export process take anywhere from 15 minutes to 2 hours per search term. So, a large number of terms and a large number of relevant files can result in a lengthy process.
- Burning the exported relevant files on to media for delivery to the client is the next part of the deliverables process. We have the ability to create media in CD's, DVD's, Zip, Hard Drives and Tape. Time to create the deliverable media is relevant to the type of media, the amount of data to be delivered and the number of media to be created. The more you want, the more time it takes.
- The last step in the deliverables process is the quality control checks and mailing. Each disk is verified as follows:
  - Each deliverable is produced from a master source disk. The master source disk is verified at the time of creation both electronically and visually.
  - Each deliverable, once produced, is verified to the master source disk electronically. Each deliverable is then verified visually by at least two personnel from the Grant Thornton computer forensic team.
  - The visual inspection includes the following:
    - Insuring that the disk is recognized by the test computer(s)
    - The disk opens and reveals its contents
    - Any folder located on the disk opens and files are present
    - Random files are selected and they open. (*Important note – this process is limited to Microsoft word and excel files only*).
  - Most deliverables are sent via fed-ex for overnight delivery. Local delivery can be handled through a courier or other method.

### What is an MD5 hash?

An MD5, much like its predecessor the CRC, is a mathematical formula. If this formula is applied to an individual file, group of files, folders, or entire drive, it will produce a unique value for those items. This allows for the integrity and uniqueness of the applied items to the formula to be verified.

***The analogy concerning the hash is as follows: Statistically speaking, an individual has a greater chance of walking down the street and finding a lottery ticket for tonight's drawing and being the sole winner of that nights prize having identified all 7 numbers on the ticket then having a hashed file be modified and upon re-running the formula against the file, the same value is produced.***

### What kinds of databases can you work with?

The type of database is less important then the type of output and the purpose of the output. We have successfully worked with databases ranging from Oracle, Sybase, and SAP to access and several proprietary UNIX, midrange, and mainframe systems.

The key to successful manipulation of data from any system is understanding the system, what you need from it and planning the extraction of the data in a useable, easily understood format. The problem is often in creating the output.

Database questions will need to be addressed on a case by case basis.



### Can you work with tapes and if so, what kind?

Tapes are a wonderful source of historical data. Often, tapes store more than last week's backup. Many businesses will change technology but maintain backups from prior periods. This source of information requires special attention.

At the present time, we can work with the following tape types in house:

- DLT
- DAT
- VXA
- Colorado 250MB, 350MB, 5GB, T1000
- IOMEGA and Trekker

In addition, we have aligned ourselves with several data recovery companies that can support our efforts on just about any tape type and platform.

### What kinds of cases have you worked on?

We have seen tremendous success over the past few years. The cases we have had the pleasure to work with include:

- Insurance related matters including viatical companies
- Securities (SEC investigations) – Stock holder suits against brokers – Stock holder suits against companies
- Corporate investigations – Fraud – Employee issues – Sarbanes/Oxley – Whistle blower
- FTC actions – Price fixing – Unfair trade actions – Investigations into consumer fraud
- Telecommunications – Pricing issues – Employment issues
- Receiverships – Bankruptcy – Labor issues
- Debtor / Creditor actions – Investigation in locating missing funds
- Hacking cases – Incident response, Managing the crime scene, locating the source, assisting government in catching the bad guy
- Theft of trade secrets
- Destruction of evidence
- Best evidence / correct evidence cases – Did the client actually receive everything they requested?
- Employee behavior / conduct cases
- Security audit in conjunction with employee/outsider malfeasance.



## How quickly can you respond and what does that mean?

Grant Thornton's computer forensic team recognizes that the preservation of evidence starts with immediate or near immediate response. Once the client has decided to involve us, obtaining the evidence is critical to the on-going investigation. With this in mind, Grant Thornton's computer forensic team tries to meet the following conditions:

- Anywhere in the 48 states in 24 - 48 hours from the time authorized to travel to that site.
- Anywhere in the world in 48 – 72 hours from the time authorized to travel to that site.

What does this mean - A Grant Thornton's computer forensic team will prepare its equipment and travel the most direct and efficient way possible to the target location(s). Once on site, we will start securing and/or acquiring the data from the site. This will be discussed and agreed upon prior to our leaving for the target site. This does not mean that we will have answers or deliverables for our clients upon our arrival or while on the site. It means we will arrive on site and begin working based on our written understanding.

## Once you start a case, how long before we can get some information?

This is a difficult question and the answer is as soon as possible. Once a case is taken on, we will put every available resource to our client's case and will continue working diligently in providing them the answers and data they need. The following is important to remember:

- There are many processes and procedures which are controlled by technology and the data extracted from the target site. We do not control the time or length of the process. It takes what it takes.
- Emergencies can and will be handled in an expeditious manner. Unfortunately we are required to do certain things in a certain order and failure to do this will result in delays later in the engagement.
- As with most things, computer forensics takes advantage of a natural momentum that builds through the process. Each case is handled in a similar way and as long as the process is agreed upon and followed, things which appear at first to not be moving will suddenly take off or be completed. ***Natural momentum...***

**Robert Moody, Director**

**Economic Advisory Services**

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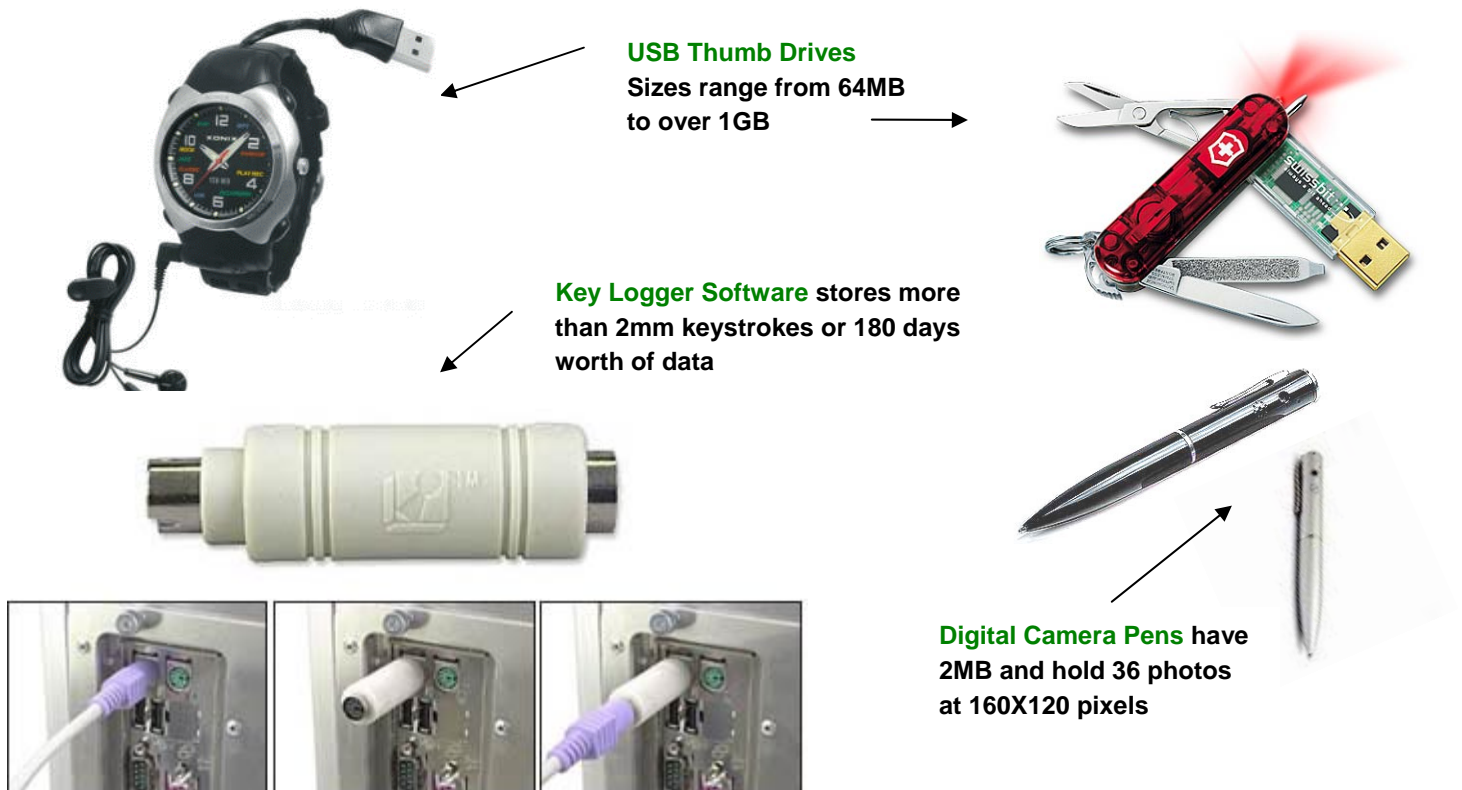
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Statistics show that over 50% of the intrusion and network security breaches are actually perpetrated by insiders, usually employees.

## Tools of the trade...

Grant Thornton 



**USB Thumb Drives**  
Sizes range from 64MB to over 1GB

**Key Logger Software** stores more than 2mm keystrokes or 180 days worth of data

**Digital Camera Pens** have 2MB and hold 36 photos at 160X120 pixels

Our **economic advisory services** professionals provide services from data seizure and analysis; recovery of lost, hidden, and deleted information; electronic discovery; to expert witness testimony. We work with business owners, attorneys, accountants, governmental agencies, and the courts to create a complete, end-to-end plan for handling information. Our services have been used by the public and private sectors as well as law enforcement.

# Common File Extensions

## Economic Advisory Services



Extension	Details
.ART	"Static Art" compressed AOL graphic format
.AVI	Audio/Video Interleave, file format used by Video for Windows
.BAT	MS-DOS Batch File
.BIN	Binary File
.BMP	Windows BITMAP format
.CAB	Windows Cabinet file
.CGM	Computer Graphics Metafile
.CHK	File fragments saved by ScanDisk
.COM	DOS Application
.DAT	Data file
.DLL	Dynamic-Link Library
DOC/.DOT/.XLS/.PPT/.PPS/.MDB	Microsoft Office Suite of Application: Word, Excel, PowerPoint, Access
.EXE	Executable program OR self-extracting archive file
.GIF	Graphical Interchange Format
.HLP	Microsoft Help Documentation
.HTM/.HTML/.SHTML	HyperText Markup Language, Internet documents (AKA webpages)
.INF	Hardware Info file
.INI	System Initialization file
.JAR	Java compressed archive file
.JPG/.JPEG/.JPE/.JFIF	24bit common Internet file format for color-rich image
.JS	JavaScript program code snippet
.LHA/.LZH	Lempel-Ziv-Huffman archive
.LOG	Created by many applications – usually a text
.LPW/.SAM/.SMM	Lotus WordPro document
.MID/.MIDI	Musical Instrument Digital Interface, orchestrated digital sound files
.MIM/.MME/.MIME/.UUE/.UU1	Encoded files often used in Internet e-mail
.MOV	Apple QuickTime Movie

Extension	Details
.MP3	MPEG Layer III (digital audio)
.MPG/.MPEG	Moving Picture Experts Group movie file
.MSG	Saved e-mail message file
.PDF	Adobe Portable Document Format
.PL	Perl program code
.PNG	Bitmapped image (Portable Network Graphics)
.QBB	QuickBooks backup file for financial data
.RA/.RAM/.RM/.RTS	RealAudio files, Internet streamed audio and video
.REG	Windows Registry file
.RTF	Microsoft Rich Text Format
.SCR	Screen Saver file
.SIG	E-mail signature file – appended to outgoing e-mail messages
.SWF	Macromedia Shockwave Flash animation movie
.SYS	System config file
.TIF/TIFF	Tagged Information File Format, a large high quality image format
.TTF	TrueType fonts
.TXT	Standard MS-DOS text format
.VBS	Visual Basic Script program code
.VXD	Virtual device driver
.WAV	Windows standard waveform sound files
.WMA	Windows Media Player format for audio and video files
.WMF	Microsoft Windows Metafile
.WP/.WPD/.WP4/.WP5/.WP6/.WPT	Corel WordPerfect documents
.WPS/.BPS/.WKS/.BKS/.WDB/.BDB	Microsoft Works file formats (Word Processor, Spreadsheet and Database)
.WRI	Windows Write files
.ZIP	PKZip archive



# Memory Size Index

## Economic Advisory Services



Abbrev.	Description	Numeric Name	Binary Value	Binary Power	Decimal Value
<b>B</b>	<b>Byte</b>	<b>One</b>	1	<b>1</b>	1
<b>KB</b>	<b>Kilobyte</b>	<b>Thousand</b>	1,024	<b>1 to the 10th</b>	1,000
<b>MB</b>	<b>Megabyte</b>	<b>Million</b>	1,048,576	<b>2 to the 20th</b>	1,000,000
<b>GB</b>	<b>Gigabyte</b>	<b>Billion</b>	1,073,741,824	<b>2 to the 30th</b>	1,000,000,000
<b>TB</b>	<b>Terabyte</b>	<b>Trillion</b>	1,099,511,627,776	<b>2 to the 40th</b>	1,000,000,000,000
<b>PB</b>	<b>Petabyte</b>	<b>Quadrillion</b>	1,125,899,906,842,620	<b>2 to the 50th</b>	1,000,000,000,000,000
<b>EB</b>	<b>Exabyte</b>	<b>Quintillion</b>	1,152,921,504,606,850,000	<b>2 to the 60th</b>	1,000,000,000,000,000,000
<b>BB</b>	<b>Brontobyte</b>	<b>Sextillion</b>	1,180,591,620,717,410,000,000	<b>2 to the 70th</b>	1,000,000,000,000,000,000,000



# Common File System Information

## Economic Advisory Services



Criteria	NTFS5	NTFS	FAT32	FAT16	FAT12
Operating System	Windows 2000 Windows XP	Windows NT Windows 2000 Windows XP	Windows 98 Windows ME Windows 2000 Windows XP	DOS All Versions of Microsoft Windows	DOS All Versions of Microsoft Windows
Max Volume Size	2TB	2TB	2TB	2GB	64MB
Max Files on Volume	Nearly Unlimited	Nearly Unlimited	Nearly Unlimited	~65000	*****
Max File Size	Limit Only by Volume Size	Limit Only by Volume Size	4GB	2GB	*****
Max Clusters Number	Nearly Unlimited	Nearly Unlimited	268435456	65535	4096
Max File Name Length	Up to 255	Up to 255	Up to 255	Standard – 8.3 Extended – up to 255	Standard – 8.3
Unicode File Names	Unicode Character Set	Unicode Character Set	System Character Set	System Character Set	System Character Set
System Records Mirror	MFT Mirror File	MFT Mirror File	Second Copy of FAT	Second Copy of FAT	Second Copy of FAT
Boot Section Location	First & Last Sectors	First & Last Sectors	First Sector	First Sector	First Sector
File Attributes	Standard and Custom	Standard & Custom	Standard Set	Standard Set	Standard Set
Alternate Streams	Yes	Yes	No	No	No
Compression	Yes	Yes	No	No	No
Encryption	Yes	No	No	No	No
Object Permission	Yes	Yes	No	No	No
Disk Quotas	Yes	No	No	No	No
Sparse Files	Yes	No	No	No	No
Reparse Points	Yes	No	No	No	No
Volume Mount Points	Yes	No	No	No	No
Built in Security	Yes	Yes	No	No	No
Recoverability	Yes	Yes	No	No	No



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