Opportunities and Obstacles: E-Discovery from Mobile Devices

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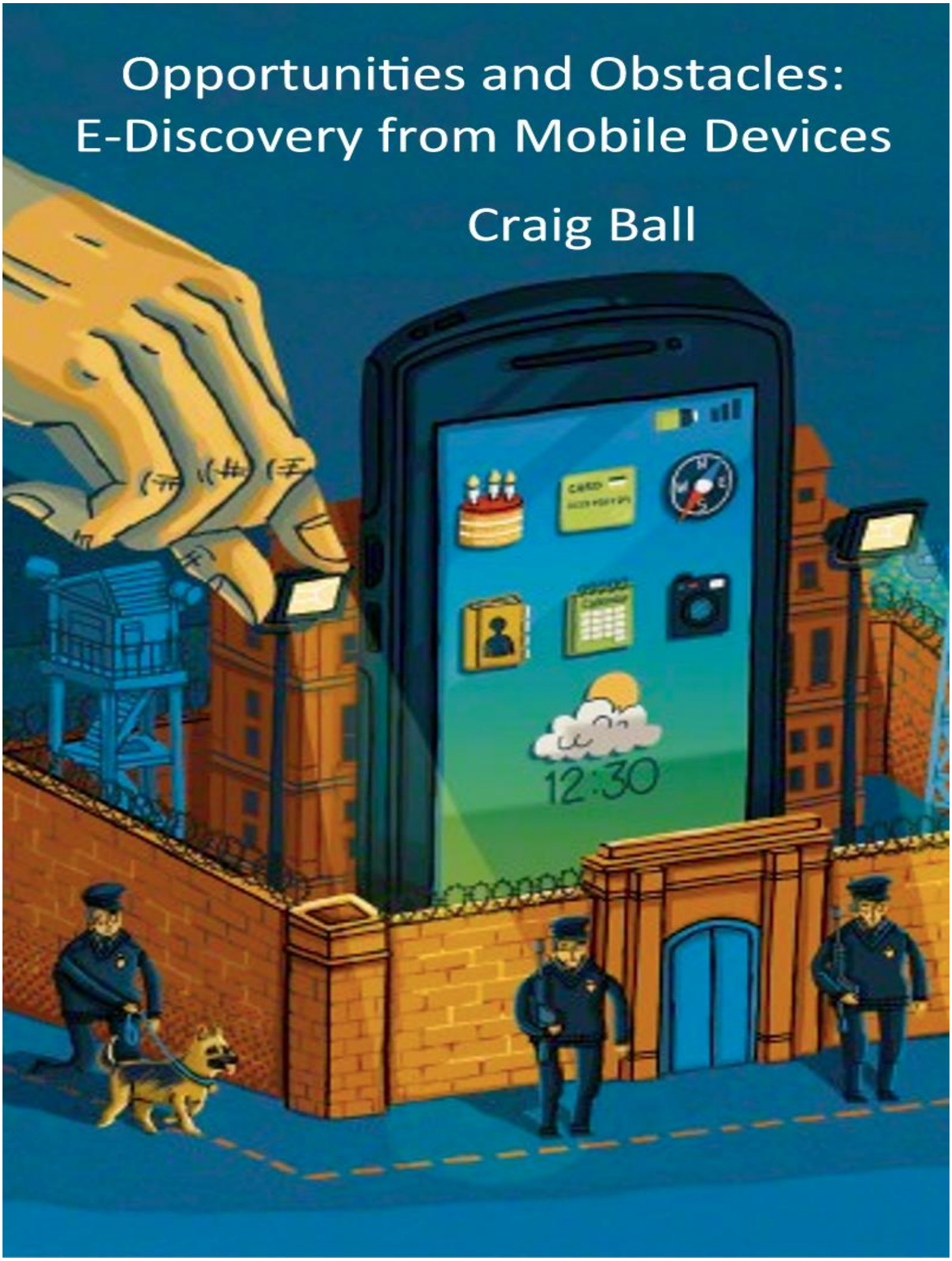

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Craig Ball[1] ©2015

Do you live two lives, one online and the other off? Millions lead lives divided between their physical presence in the real world and a deeply felt presence in virtual worlds, where they chat, post, friend, like and lurk. They are constantly checking themselves in and checking others out in cyberspace. In both worlds, they leave evidence behind. They generate evidence in the real world that comes to court as testimony, records and tangible items. Likewise, they generate vast volumes of digital evidence in cyberspace, strewn across modern electronic systems, sites, devices and applications.

Trial lawyers who know how to marshal and manage evidence from the real world are often lost when confronted with cyber evidence. This article takes an introductory look at discovery from mobile devices.

The Blessing and Curse of ESI

Even if you don't know that data volume is growing at a compound annual rate of 42 percent, you probably sense it. This exponential growth suggest there's little point feeling overwhelmed by data volumes *today* because we are facing volumes *ten times as great in five years*, and *fifty times* as great in ten years.[2] Today is tomorrow's "good old days."

There's going to be a lot more electronic evidence; but, there's still time to *choose* how you deal with it.

If you're a lawyer, you can curse electronic evidence and imagine you're preserving, collecting and requesting all you need without cell phones, the Cloud and all that e-stuff.

Or, you can see that electronic evidence is powerful, probative and downright amazing, and embrace it as the best thing to happen to the law since pen and ink. Never in human history have we enjoyed more or more persuasive ways to prove our cases.

Mobile Miracle

According to the U.S. Center for Disease Control, more than 41% of American households have no landline phone. They rely on wireless service alone. For those between the ages of 25 and 29, *two-thirds* are wireless-only. Per an IDC report sponsored by Facebook, four out of five people start using their smartphones within 15 minutes of waking up and for most, it's the very first thing they do, ahead of brushing their teeth or answering nature's call. For those in the lowest economic stratum, mobile phones are the principal and often sole source of Internet connectivity.

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[2] Market research firm IDC predicts that digital data will grow at a compound annual growth rate of 42 percent through 2020, attributable to the proliferation of smart phones, tablets, Cloud applications, digital entertainment and the Internet of Things.

Last month (September 2015), Apple sold 13 million new iPhones in three days. These will soon hold apps drawn from the more than *1.4 million* apps offered in the iOS App Store, compounding the more than *100 billion* times these apps have been downloaded and installed to date.

Worldwide, phones running the competing Android operating system account for three times as many activations as Apple phones. The United States Supreme Court summed it up handily: "*Today many of the more than 90% of American adults who own cell phones keep on their person a digital record of nearly every aspect of their lives*."[3]

Within this comprehensive digital record lies a cornucopia of probative evidence gathered using a variety of sensors and capabilities. The latest smart phones contain a microphone, fingerprint reader, barometer, accelerometer, compass, gyroscope, three radio systems, near field communications capability, proximity, touch, light and moisture sensors, a high-resolution still and video camera and a global positioning system.[4] As well, users contribute countless texts, email messages, social networking interactions and requests calls for web and app data.

Smart phones serve as a source of the following data:

- SIM card data
- Files
- Wi-Fi history
- Call logs
- Photographs and video
- Contacts
- Geolocation data
- E-mail
- Voicemail
- Chat
- SMS and MMS
- Application data
- Web history
- Calendar
- Bookmarks
- Task lists
- Notes
- Music and rich media

Mustering Mobile

For the last decade, lawyers have been learning to cope with electronic evidence. We *know* how to acquire the contents of hard drives. We *know* about imaging and targeted collection. We've gotten better at culling, filtering and processing PC and server data. After all, most corporate data lives within identical file and messaging systems, and even those scary databases tend to be built on just a handful of well-known platforms. Too, we've got good tools and lots of skilled personnel to call on. **Now, let's talk mobile.**

[3] *Riley v. California*, 573 U.S. ___ (2014).

[4] In support of 911 emergency services, U.S. law requires the GPS locator function when the phone is on.

Let's talk interfaces. We've been acquiring from hard drives for thirty years, using two principal interfaces: PATA and SATA. We've been grabbing data over USB for 16 years, and the USB 1, 2 and 3 interfaces all connect the same way with full backward compatibility. But phones and tablets? The plugs change almost annually (30-pin dock? Lightning? Thunderbolt?). The internal protocols change faster still: try seven generations of iOS in five years.

COMPUTER INTERFACES

USB

SATA

MOBILE DEVICE INTERFACES

Let's talk operating systems. Two principal operating systems have ruled the roost in P.C. operating systems for decades: Windows and MacOS. Although the Android and iOS operating systems command huge market shares, there are still dozens of competing proprietary mobile operating systems in the world marketplace.

COMPUTERS

MAC

WINDOWS

MOBILE DEVICES

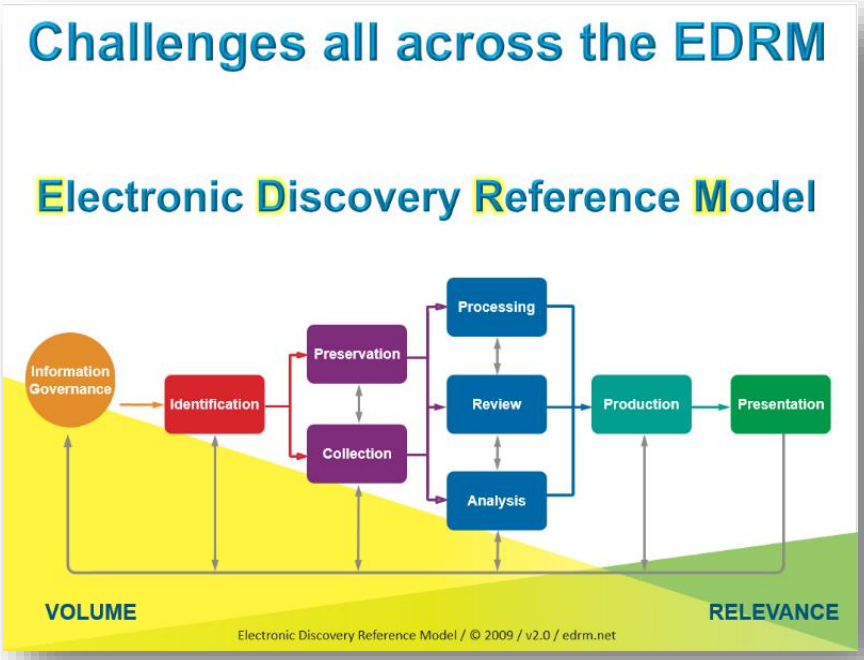
Let's talk encryption. There is content on phones and tablets (*e.g.,* e-mail messaging) that we cannot acquire at all as a consequence of unavoidable encryption. Apple lately claims that it has so woven encryption into its latest products that it couldn't gain access to some content on its products if it tried. The law enforcement community depends on the hacker community to come up with ways to get evidence from iPhones and iPads. What's wrong with THAT picture?

Let's talk tools. Anyone can move information off a PC. Forensic disk imaging software is free and easy to use. You can buy a write blocker suitable for forensically-sound acquisition for as little as $27.00. But, what have you got that will preserve the contents of an iPhone or iPad? Are you going to synch it with iTunes? Does iTunes grab all you're obliged to preserve? If it did (and it doesn't), what now? How are you going to get that iTunes data into an e-discovery review platform? *There's no app for that.*

Let's talk time. It takes longer to acquire a 64Gb iPhone than it does to acquire a 640Gb hard drive. A fully-loaded iPad may take 48 hours. Moreover, you can acquire several hard drives simultaneously; but, most who own tools to acquire phones and tablets can process just one at a time. It's about as non-scalable a workflow as your worst e-discovery nightmare.

Challenges All Across the EDRM

The Electronic Discovery Reference Model or EDRM is an iconic workflow schematic that depicts the end-to-end e-discovery process. It's a handy context in which to address the ways that mobile devices pose challenges in e-discovery.



Information Governance:

Businesses adopt a BYOD (Bring Your Own Device) model when they allow employees to connect their personal phones and tablets to the corporate network. Securing the ability to access these devices for e-discovery requires employers obtaining consents in employment agreements.

Identification:

Mobile devices tend to be replaced and upgraded more frequently than laptop and desktop computers; accordingly, it's harder to

maintain an up-to-date data map for mobile devices. Mobile devices also do not support remote collection software of the sort that makes it feasible to search other network-connected computer systems. Too, the variety of apps and difficulty navigating the file systems of mobile devices complicates the ability to catalog contents.

Preservation:
It's common for companies and individuals to own mobile devices, yet lack any means by which the contents of the phone or tablet can be duplicated and preserved when the need to do so arises in anticipation of litigation. Even the seemingly simple task of preserving text messages can be daunting to the user who realizes that, *e.g.*, the iPhone offers no easy means to download or print text messages.

Collection: As there are few, if any, secure ways to preserve mobile data *in situ,* preservation of mobile generally entails collection from the device, by a computer forensic expert, and tends to be harder, slower and more costly than collection from PC/server environments.

Processing: The unpacking, ingestion, indexing and volume reduction of electronically stored information on mobile devices is referred to as "Processing," and it's complicated by the fact that so many devices have their own unique operating systems. Moreover, each tends to secure data in unique, effective ways, such that encrypted data cannot be processed at all if it is not first decrypted.

Review:
Review of electronic evidence tends to occur in so-called "review platforms," including those with well-known names like Concordance and Relativity. For the most part, these (and message archival and retrieval systems) are not equipped to support ingestion and review of all the types and forms of electronic evidence that can be elicited from modern mobile devices and applications.

Geolocation

Cell phones have always been trackable by virtue of their essential communication with cell tower sites. Moreover, and by law, any phone sold in the U.S. must be capable of precise GPS-style geolocation in order to support 9-1-1 emergency response services. Your phone broadcasts its location all the time with a precision better than ten meters. Phones are also pinging for Internet service by polling nearby routers for open IP connections and identifying themselves and the routers. You can forget about turning off all this profligate pinging and polling. Anytime your phone is capable of communicating by voice, text or data, you are generating and collecting geolocation data. Anytime. Every time. And when you interrupt that capability that, too, leaves a telling record.

Phones are just the tip of the iceberg. The burgeoning Internet of Things (IoT) is a cornucopia of geolocation data. My Nest thermostat knows if I'm home or away and senses my presence as I walk by. The cameras in my home store my comings and goings in the Cloud for a week at a time. When someone enters, I get a text. My cell phone controls door locks and lighting, all by conversing across the Web. I can instruct Alexa, my Amazon Echo virtual assistant to turn on and off lights, and thanks to a free service called *If This Then That* (IFTTT), I can ask iPhone's Siri to turn lights on and off by *texting* them, at the cost of leaving an indelible record of even that innocuous act. Plus, Siri is now listening *all the time* while my Phone charges, not just when I push the home button and summon her. *"Hey Siri, can you be my alibi?"*

Analysis:
Much mobile data--particularly the shorthand messaging data that accounts for so much mobile usage—tend not to be good candidates for advanced analytics tools like Predictive Coding.

Production:
Finally, how will you produce data that's unique to a particular app in such a way that the data can be viewed by those who lack both the device and the app? Much work remains with respect to forms of production best suited to mobile data and how to preserve the integrity, completeness and utility of the data as it moves out of the proprietary phone/app environment and into the realm of more conventional e-discovery tools.

So, What Do I Do?
Though mobile is unlike anything we've faced in e-discovery and there are few affordable tools extant geared to preserving and processing mobile evidence, we are not relieved of the duty to preserve it in anticipation of litigation and produce it when discoverable.

You first hurdle will be persuading the phone's user to part with it intact. Mobile devices are unique in terms of intimacy and dependency. Unlike computers, mobile devices are constant companions, often on our person. The attachment many feel to their mobile phone cannot be overstated. It is simply inconceivable to them to part with their phones for an hour or two, let alone overnight or indefinitely. Many would be unable to contact even their spouse, children or closest friends without access to the data stored on their phones. Their mobile phone number may be the only way they can be contacted in the event of an emergency. Their phones wake them up in the morning, summon their ride to work, buy their morning bagel and serve as an essential link to almost every aspect of their social and business lives. Smart phones have become the other half of their brains.

So, when you advise a mobile user that you must take their devices away from them in order to collect information in discovery, you may be shocked at the level of resistance--even panic or duplicity--that request prompts. You need a plan and a reliable projection as to when the device will be returned. Ideally, you can furnish a substitute device that can be immediately configured to mirror the one taken without unduly altering evidence. Don't forget to obtain the credentials required to access the device (*e.g.*, PIN code or other passwords). Further, be wary of affording users the opportunity to delete contents or wipe the device by resetting to factory settings.[5] Perhaps due to the intimate relationship users have with their devices, mobile users tend to adopt an even more proprietary and protective mien than computer users.

Four Options for Mobile Preservation
In civil cases, before you do anything with a mobile device, it's good practice to back it up using the native application (e.g., iTunes for iPhones and iPads and preserve the backup). This gives you a path back to the data and a means to provision a substitute device, if needed. Then, you have four options when it comes to preserving data on mobile devices:

[5] Contents can often be erased by users entering the wrong password repeatedly, and it's not uncommon to see users making this "mistake" on the eve of being required to surrender their phones.

1. ***Prove You Don't Have to Do It:*** If you can demonstrate that there is no information on the mobile device that won't be obtained and preserved from another more-accessible source then you may be relieved of the obligation to collect from the device. This was easier in the day when many companies employed Blackberry Enterprise Servers to redirect data to then-ubiquitous Blackberry phones. Today, it's much harder to posit that a mobile devices has no unique content. But, if that's your justification to skip retention of mobile data, you should be prepared to prove that anything you'd have grabbed from the phone was obtained from another source.

   It's an uphill battle to argue that a mobile device meets the definition of a "not reasonably accessible" source of discoverable data. The contents of mobile devices are readily accessible to users of the devices even if they are hard for others to access and collect.

2. ***Sequester the Device:*** From the standpoint of overall cost of preservation, it may be cheaper and easier to replace the device, put the original in airplane mode (to prevent changes to contents and remote wipes) and sequester it. Be sure to obtain and test credentials permitting access to the contents before sequestration.

3. ***Search for Software Solutions:*** Depending upon the nature of the information that must be preserved, it may be feasible to obtain applications designed to pull and preserve specific contents. For example, if you only need to preserve messaging, there are applications geared to that purpose, such as Decipher TextMessage or Ecamm PhoneView. Before using unknown software, assess what it's limitations may be in terms of the potential for altering metadata values or leaving information behind.

4. ***Get the credentials, Hire a Pro and Image It:*** Though technicians with the training and experience to forensically image phones are scarce and may be pricey, it remains the most defensible approach to preservation. Forensic examiners expert in mobile acquisition will have invested in specialized tools like Cellebrite UFED, Micro Systemation XRY, Lantern or Oxygen Forensic Suite. Forensic imaging exploits three levels of access to the contents of mobile devices referred to as Physical, Logical and File System access. Though a physical level image is the most complete, it is also the slowest and hardest to obtain in that the device may need to be "rooted" or "jailbroken" in order to secure access to data stored on the physical media. Talk with the examiner about the approaches best suited to the device and matter and, again, be sure to get the user's credentials (i.e., PIN and passwords) and supply them to the examiner. Encryption schemes employed by the devices increasingly serve to frustrate use of the most complete imaging techniques. In those case, some data is simply unobtainable by any current forensic imaging methodology.