Mobile Forensics
Tian Guyan
22 January 2017

Description

1. What is digital forensics? ***(5 points)*** What is mobile forensics? ***(5 points)***

Digital Forensics is the application of Computer Science and investigative procedures for a legal purpose involving the analysis of digital evidence after proper search authority, chain of custody, validation with mathematics, use of validation tools, repeatability, reporting, and possible expert presentation.

Mobile Forensics is a branch of Digital Forensics relating the recovery of digital evidence or data from a mobile device under forensically sound conditions.

2. Please list at least five types of information can be found on a smartphone that can be helpful to a crime investigation? ***(10 points)***

1.) Text Messages
2.) Call History
3.) GPS Information
4.) Emails
5.) Websites visited

3. As a mobile forensics examiner, where can you find a backup of a smartphone? ***(10 points)***

For smartphones such as iPhones and Androids, their backups can be found:

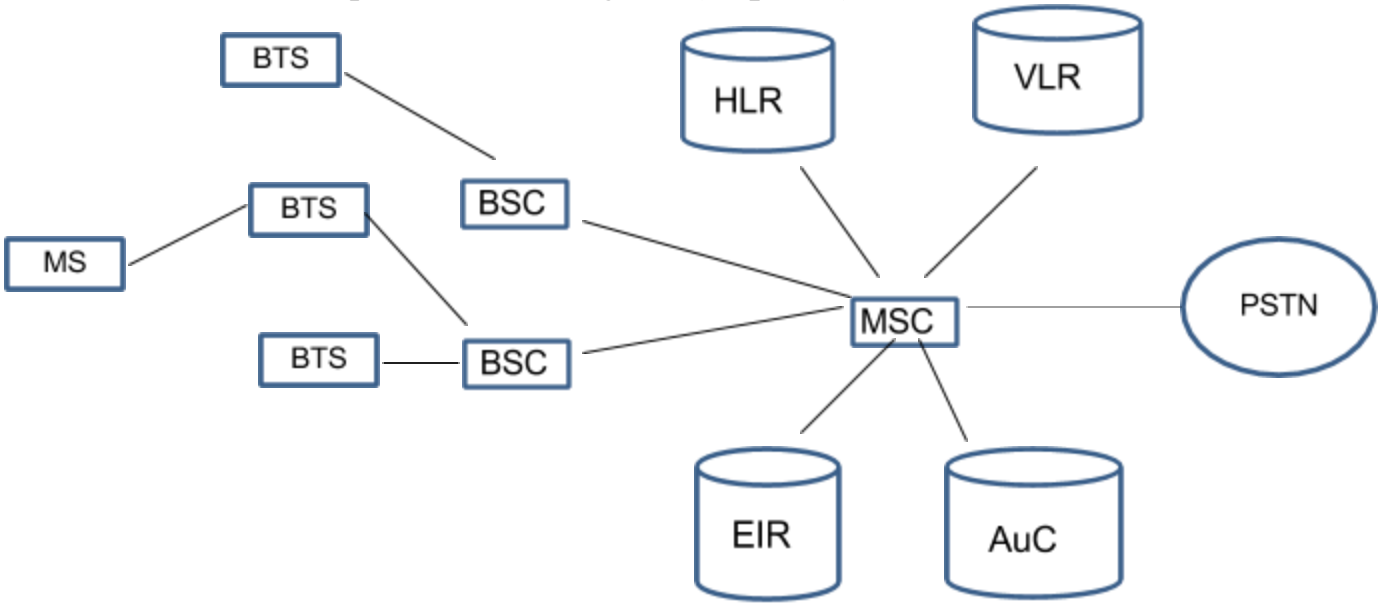
- On computer in folders
    - Mac: ~/Library/Application Support/MobileSync/Backup
    - Windows 7 and 8: \Users\<username>\AppData\Roaming\Apple Computer\MobileSync\Backup

- iTunes (for iPhone)
- On the cloud such as Apple iCloud or Google Cloud.

4. Please list at least three mobile anti-forensics methods or techniques? ***(10 points)***

1. Encryption
2. Burning
3. Water: Chemical or Freshwater
4. Physical: Break SIM Card, or Smash

5. Consider the diagram is the GSM cellular network, please write down the name of each component in the diagram. ***(20 points)***



6. Please explain what is multiple access problem in your own words? ***(5 points)***

The Multiple Access Problem is an issue brought by the need to share a single communication channel between multiple distributed users/phones. When multiple devices are on the same channel there can be collisions between frames that are transmitted at the same time which results in data being lost.

7. Please explain what is FDMA in your own words? ***(5 points)***

FDMA or Frequency Division Multiple Access, different users/mobiles are assigned different frequency bands to communicate/transfer data with the base station.

8. Please explain what is TDMA in your own words? ***(5 points)***

Used in GSM System TDMA or Time Division Multiple Access grants many users access on the same, where each one has their own time slot. To do so, it divides a channel into 3 time slots assigning slots to multiple calls. Thus, a single frequency can support multiple, simultaneous data channels. As a result it requires compact timing synchronization.

9. Please explain what is CDMA in your own words? ***(5 points)***

CDMA or Code Division Multiple Access grants different users/mobiles different codes to distinguish them as their signals are spread out and shared on the same bandwidth/frequency channel.

10. Read the online article ***CDMA VS GSM: What is the difference,*** http://www.pcmag.com/article2/0,2817,2407896,00.asp, and then answer the following three questions.
    a. Which carriers are using GSM? **(2 points)**
       AT&T & T-Mobile

    b. Which carriers are using CDMA? **(2 points)**
       Sprint, Verizon, and U.S. Cellular.

    c. Why so many US carriers go for CDMA, instead of GSM? **(6 points)**

Even though GSM is better (stated by the article), many US carriers for for CDMA because between the 1990s and the early 2000s companies switched from analog to digital. At the time CDMA was faster and more powerful buy as time passed GSM became superior. The companys such as Verizon and Sprint can switch to GSM but they save money when they have phones custom built for them so they cans ave to build up 4G networks rather than 3G.

11. Does a smartphone periodically communicate its nearest base transceiver station even when it is in sleep mode? **(5 points)**. If yes, does the smartphone initiate the communication or the base transceiver station initiate the communication? **(5 points)**

Yes, the smartphone registers or gives a location update through the tower to the phone network. With smartphones if the user has notifications enabled on their phones, the connection and be partially kept open from both the device and server side.