




# Was it actually there?


Locations are graded on a scale based upon their intended accuracy and timestamp.

| High Score   | Mid Score  | Low Score  |
|--|--|--|
|  <p>Records with <b>good accuracy</b> and a <b>related</b> timestamp<br/>E.g., Location data inside a photograph.</p> |  <p>Records with <b>good accuracy</b> but <b>unrelated</b> timestamps<br/>E.g., Location data from image analytics.</p> |  <p>Records of a location that was <b>never</b> visited<br/>E.g., A location searched in Maps that was never visited.</p> |


Note that this cheat sheet is based on the intended & average accuracy. Erroneous records can and do occur.  
This document is a guide only. For further information, see if full location documentation exists.





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| Most Reliable  | Path  | Category | Notes  |
|--|---|----------|--|
|  | /private/var/mobile/Library/Caches/com.apple.routined/Cache.sqlite                    | Routine  | <b>ZRTCLOCATIONMO</b> Cached locations whenever the device seeks to find its location.<br><b>ZRTVISITMO</b> Aggregated locations every day or two. Looks for patterns of locations that were stayed at rather than passed through.   |
|  | /private/var/mobile/Library/Caches/com.apple.routined/Local.sqlite                    | Routine  | Local and Cloud version of the same file but may contain different records.<br><b>ZRTLEARNEDLOCATIONOFINTERESTMO</b> locations that have been visited numerous times become “Learned Locations”.<br><b>ZRTLEARNEDLOCATIONOFINTERESTVISITMO</b> Tracks the approximate entry and exit time of the Learned Location.<br><b>ZRTLEARNEDLOCATIONOFINTERESTTRANSITIONMO</b> records information about how the device travelled to a Learned Location.<br><b>ZRTMAPITEMMO</b> records named locations where the device has been. Note that the CreationDate is not when the device was there, but a day or so afterwards. |
|  | /private/var/mobile/Library/Caches/com.apple.routined/Cloud-V2.sqlite                 |          |  |
|  | /private/var/mobile/Library/Caches/com.apple.routined/Cloud.sqlite                    | Routine  | <b>ZRTMAPITEMMO</b> records named locations where the device has been. Note that the CreationDate is not when the device was there, but a day or so afterwards.  |
|  | /private/var/mobile/Library/Caches/com.apple.routined/CoreRoutine.sqlite              | Routine  | <b>ZRTCLOCATIONMO</b> Cached locations whenever the device seeks to find its location.   |
|  | /private/var/mobile/Library/DuetExpertCenter/streams/predictionContext/local/*        | Routine  | SEGB file which contains multiple BPLists. Each BPLIST contains location data similar to that found in cache.sqlite [ZRTCLOCATIONMO]   |
|  | /private/var/mobile/ Media/PhotoData/Photos.sqlite                                    | Media    | <b>ZASSET</b> may contain the location data within the EXIF data.<br><b>ZADDITIONALASSETATTRIBUTES</b> may also contain the HorizontalAccuracy information.<br><b>ZMASTER</b> contains a copy of the EXIF data. *1 *2  |
|  | /private/var/mobile/Media/DCIM/*  | Media    | Images may contain the location data within the EXIF data. May also contain the HorizontalAccuracy information. *1   |
|  | /private/var/mobile/ Media/PhotoData/Caches/GraphService/PhotosGraph/photosgraph.kgdb | Media    | <b>EdgeValue</b> contains location and timestamp information in the realValue field grouped by the elementID. The data relates to media that exists in the photo gallery. The data should be good but as with all media data, bear in mind that the device may not have actually taken the image/video. *1   |


|  |   |         |  |
|--|---|---------|--|
|  | /private/var/mobile/Library/Caches/com.apple.findmy.fmipcore/Devices.data | FindMy  | These files relate to the FindMyDevices information. The location information contained includes accuracy information and is generally reliable. However, it is generally NOT the location of the phone itself, but other devices (Macbook/Airpods/Airtags) or family members.   |
|  | /private/var/mobile/Library/Caches/com.apple.findmy.fmipcore/Items.data   | FindMy  |  |
|  | /private/var/mobile/Containers/Shared/AppGroup.*/Maps/MapsSync_0.0.1      | MapData | <p><b>ZHISTORYIEM</b> contains Searched Locations and Routes planned. Generally, the data does not mean that the location was visited, but with one exception. If the user plans a route, the starting point is <i>USUALLY</i> the user's actual current location. The <b>ZROUTEREQUESTSTORAGE</b> field of <b>ZHISTORYITEM</b> is a protobuf blob that contains the start and end information of the route. If there is a value of 1 at node 1/0/3/100 then it is the devices actual location.</p> <p><b>*Note this source also exists in the Poor section*</b></p> |

| <br>Reasonable | Path   | Category  | Notes   |
|--|--|-----------|---|
|  | /private/var/root/Library/Caches/location/consolidated.db                          | Geofences | <b>GeoFences   Fences</b> contains all geofences being monitored on this device. <b>*Note this source also exists in the Poor section*</b><br>Reasonable Geofences relate to Geofences monitoring for the device exiting its current location. This may be the device awaiting exit from a Frequent Location or it may be related to a reminder the user has set. i.e., "Do Not Disturb until I leave this location"  |
|  | /private/var/mobile/Media/PhotoData/Caches/GraphService/CLSPublicEventCache.sqlite | Media     | This database contains a collection of locations relevant to media analytics. The locations are derived from media items inside the device's gallery (that may or may not have been taken with the device). There are several dates that can be found in this database, one can be ignored as the time that analytics ran. But the Start and End date relate to the time period the media items were recorded. The purpose of this database is to identify an event of interest which can be used to label the moment. i.e., a festival, concert or sporting event. |

| <br>OK | Path   | Category | Notes  |
|---|--|----------|--|
|   | /private/var/mobile/Media/PhotoData/Caches/GraphService/ <ul style="list-style-type: none"> <li>• CLSBusinessCategoryCache.AOI.sqlite</li> <li>• CLSBusinessCategoryCache.Nature.sqlite</li> <li>• CLSBusinessCategoryCache.POI.sqlite</li> <li>• CLSBusinessCategoryCache.ROI.sqlite</li> </ul> | Media    | Each of these databases contains a collection of locations relevant to media analytics. The locations are derived from media items inside the device's gallery (that may or may not have been taken with the device). The timestamp is related to analytics though and it not relevant to the location. The purpose of these databases is to identify if photos were taken at a place of interest which can be used to label the moment. i.e., "Disneyland". |
|   | /private/var/mobile/Library/PersonalizationPortrait/PPSQLDatabase.db   |          | <b>loc_records</b> Contains a variety of location records related to various sources including Photos, Apple News and Maps. Some of the locations may be related to places the device has physically visited but this would need investigating on a per record basis. <b>*1</b>  |

| <br>Poor | Path  | Category   | Notes   |
|--|---|--|---|
|  | /private/var/root/Library/Caches/location/consolidated.db | Geofences  | <b>GeoFences   Fences</b> contains all geofences being monitored on this device. Poor Geofences relate to Geofences monitoring for going near a particular store (as per the installed apps) or predictions about where the device may be headed. <b>*Note this source also exists in the Reasonable section*</b> |
| /private/var/root/Library/Caches/locationd/cache_encryptedB.db                             | Harvested   | <b>WifiLocation</b> Contains the BSSID and approximate location of <i>private</i> wireless networks.<br><b>CellLocation   LteCellLocation   CdmaCellLocation   LteCellLocation   NrCellLocation   ScmdaCellLocation</b> all contains the Cell ID and approximate location of cells for the named technology.<br>Note that the records are downloaded to the device EN MASSE based on |   |


|  |   |           |  |
|--|---|-----------|--|
|  |   |           | where the device has been in the past. The timestamp is relevant to the time the record was downloaded NOT necessarily when the device was at that location.   |
|  | /private/var/root/Library/Caches/com.apple.wifid/ThreeBars.sqlite     | Harvested | <b>ZACCESSPOINT   ZNETWORK</b> Contains the BSSID and approximate location of <i>public</i> wireless networks. Note that the records are downloaded to the device EN MASSE based on where the device has been in the past. The timestamp is relevant to the time the record was downloaded NOT necessarily when the device was at that location.   |
|  | /private/var/mobile/Containers/Shared/AppGroup./*/Maps/MapsSync_0.0.1 | Map Data  | <b>ZHISTORYITEM</b> contains Searched Locations and Routes planned. Generally, the data does not mean that the location was visited, but with one exception as described in the Most Reliable section. If there is no data in the <b>ZROUTEREQUESTSTORAGE</b> field of <b>ZHISTORYITEM</b> then this record can be assumed to be a search rather than a visit.<br><b>*Note this source also exists in the Most Reliable section*</b> |


|  | Path  | Category | Notes  |
|--|---|----------|--|
|  | /private/var/root/Library/Caches/locationd/indoor_tiles/availability.db | Map Data | This database relates to the locations of stores within malls. Every iPhone will have the same data and therefore this source can safely be ignored. |





## Android


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|  | Path  | Category | Notes   |
|--|---|----------|---|
|  | /data/data/com.samsung.android.rubin.app/databases/inferenceengine_logging.db | Routine  | A log of the locations visited by the device. Includes accuracy in meters and method information (ie. Network or GPS etc)   |
|  | /data/data/com.samsung.android.providers.media/databases/media.db             | Media    | <b>Files   location   location_datetime_idx</b> may contain the location data. *Note that since Android 12, the user can modify the location and timestamp data. <b>*1 *2</b>     |
|  | /data/media/0/DCIM/Camera/*   | Media    | Images may contain the location data within the EXIF data. <b>*1</b>  |
|  | /data/data/com.samsung.storyservice/databases/dme.db                          | Media    | <b>Info</b> may contain the location data of the media items. <b>*1</b>   |
|  | /data/data/com.sec.android.daemonapp/databases/WeatherClock                   | Weather  | <b>table_weather_info</b> records the approximate location of the user for the purposes of obtaining the weather forecast. It is a reliable location, although not very accurate. |

|  | Path   | Category | Notes   |
|--|--|----------|---|
|  | /data/system/wifigeofence.db                             | WiFi     | <b>geofence_wifi</b> stores a list of the Last/First time that a wifi network was connected to and stored the approximate location of the network. Since the device must be close-by the network in order to connect, it can be assumed that the device was near this location at the time shown. |
|  | <b>Dumpsys_wifi</b>                                      | WiFi     | These log files track wireless network connections. Location data is not present in this file, but the timestamp can be taken from the log and the SSID/BSSID can be cross referenced against <b>wifigeofence.db</b> to get an approximate location at that time.                                 |
|  | /data/log/wifi/iwc/iwc_dump.txt                          | WiFi     |   |
|  | /data/misc/apexdata/com.android.wifi/WifiConfigStore.xml | WiFi     |   |

|  | Path | Category | Notes |
|--|------|----------|-------|
|  |      |          |       |

| <b>Poor</b><br> | Path   | Category | Notes  |
|---|--|----------|--|
|   | /data/data/com.google.android.apps.maps/new_recent_history_cache_search.cs | MapData  | Recent Search History, Starred Places and Labelled locations.        |
|   | /data/data/com.google.android.apps.maps/gmm_storage.db                     | MapData  | None of which means the device was actually present at the location. |
|   |  |          |  |

| <b>Terrible</b><br> | Path | Category | Notes |
|---|------|----------|-------|
|   |      |          |       |
|   |      |          |       |

| Subscript Notes   |   |  |  |  |  |  |
|---|---|--|--|--|--|--|
| *1  | *2  | *3   |  |  |  |  |
| Bear in mind that the device may not have actually taken the image/video. | Since iOS15, the user can modify the location and timestamp data. | Since Android 12, the user can modify the location and timestamp data. |  |  |  |  |