COMPUTER NETWORKS

Case Study Assignment: Exploring Field Test Mode on Smartphones

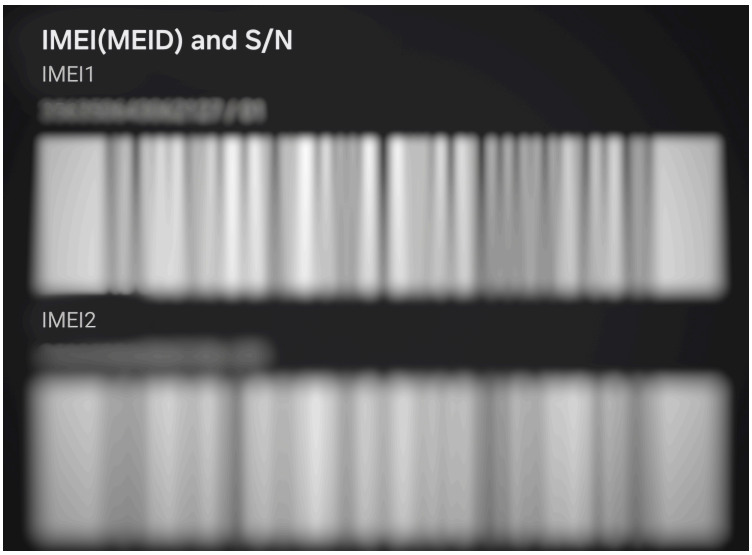
SREEVARSAN M

RA2211026050096

CSE-AIML-B

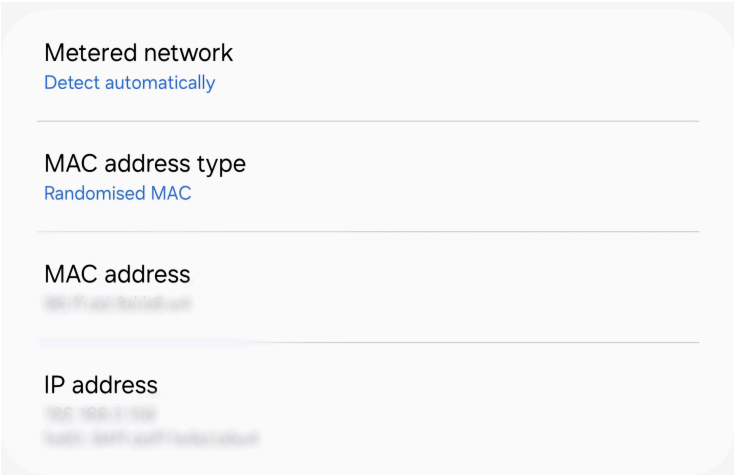
1. IMEI Number (International Mobile Equipment Identity Number)

The IMEI also can be used in tracking a SIM unlocked phone or mobile devices in case the phone gets lost or even stolen. It also helps in considering roaming in the cellular networks, thus allowing proper network to a proper device, which is very essential. It also helps in security and legal situations by facilitating tracking or disabling of a device.



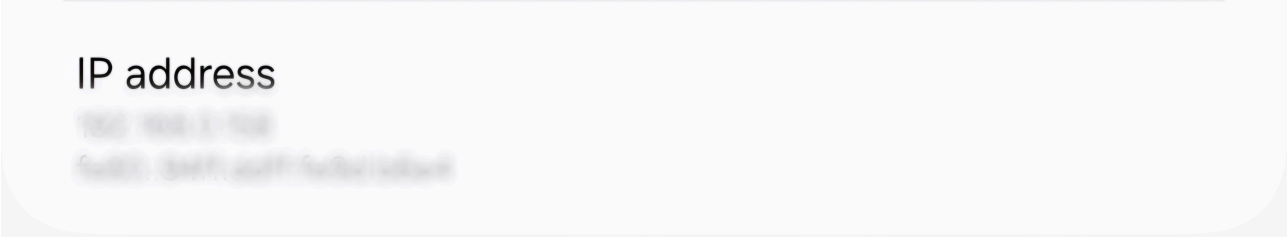
2. MAC Address (Media Access Control address)

The MAC address is a unique address given to network interfaces for local communications on the network. It's really important while trying to distinguish between devices within a network or when using Wi-Fi or Ethernet connectivity. MAC addresses are also used to keep track of devices' access to the network, and they're considered an indispensable component of local security and tracking.



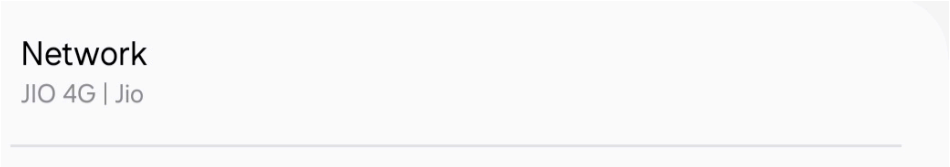
3. Internet protocol address (IP address)

IP stands for internet protocol, meaning that it is a way of referring to the method through which communication happens between devices on a network so that they can communicate over the internet. It is rudimentary to using a device and solving the problem of data routing between the device and other devices or services over the web. There are two main types of IP addresses: public IP, which is used outside your local network, and private IP, which is used within your local network. This can be used to identify a device's location as well as control the online activities of different types of devices.



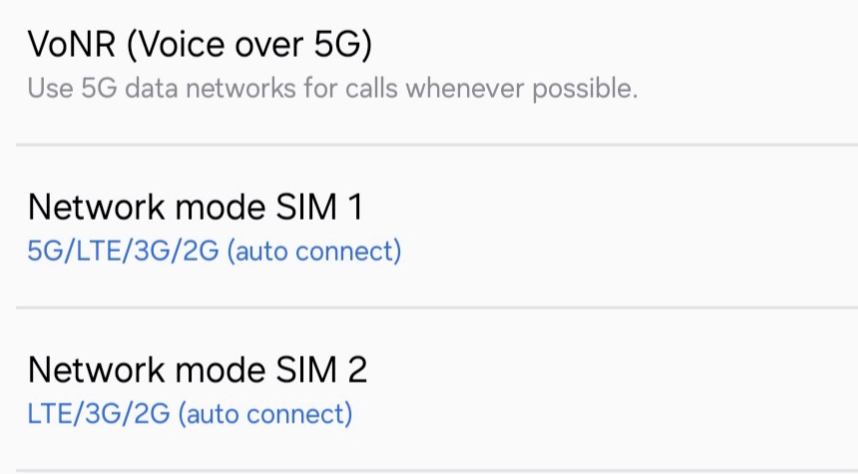
4. Network Operator/Brand (Identity of the Mobile Operator)

The Network Operator is simply the cellular service provider (e.g., AT&T, Verizon). Knowing who controls the network connectivity for the device is important. Different operators have different coverage areas, network reliability, and bandwidth speeds; thus, these affect user experience and connection quality.



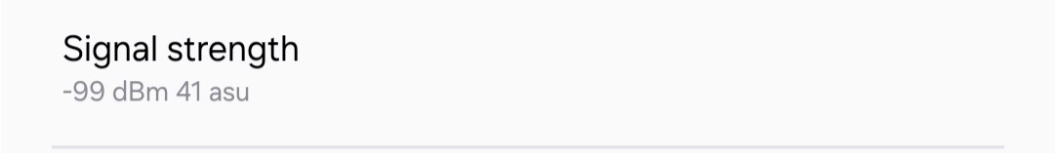
5. Network Type (4G LTE, 5G, etc.)

What defines the network type is the generation of mobile communication technology that the device is using. Every type, such as 3G, 4G LTE, or 5G, represents various levels of speed and efficiency. Understanding the network type is very important because it will ultimately determine the speeds you can get data to be received at, thus impacting voice call quality as well as internet usage.



6. Signal Strength (in dBm)

Signal strength in dBm measures the amount of power by which the signal received from the cell tower is actually getting to your device. The greater the signal (the closer it is to 0), the stronger the network connection. It is one of the key measurements used to qualify the quality of the cellular connection which, in turn, has a potential influence on the quality of calls, speed of internet, and availability of the service.



7. Download/Upload Bandwidth (Physical channel configuration and speed)

This is the rate of downloading to or uploading from a device. It is critical in evaluating internet activity performance like streaming, browsing, or file transfer. High bandwidth translates to faster data transfer; thus, it directly relates to user experience, particularly for data-intensive operations.

My Provider: **Jio**

BROADBAND | **MOBILE**

Internet Provider	Download ▼	Upload	Ping
Jio	162,6	15,7	53
My Result	**157,7**	**157,5**	**44**
Airtel	106,5	11,7	47
Vodafone Idea	8,4	1,9	98
Metrics	**Mb/s**	**Mb/s**	**ms**

8. Mobile Location Information

It refers to the geographic location of a device, which is determined often using GPS, Wi-Fi, or cellular networks, and is important for location-based services like maps, navigation, emergency services, and targeted advertising. Thus, it becomes increasingly important for mobile applications that either perform real-time tracking or have some kind of location-aware functionality.

Cell ID (Cell Identity) is a unique identifier assigned to a specific cell tower in a mobile network. It is part of the information used by mobile devices to connect to and communicate with the cellular network. The Cell ID helps determine the device's location based on the nearest cell tower it is connected to. This information is crucial for various applications, including location tracking, network management, and optimizing call routing.