



A Brief Guide To HLR Lookups

White Paper

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Velocity Made Good Ltd.



Introduction

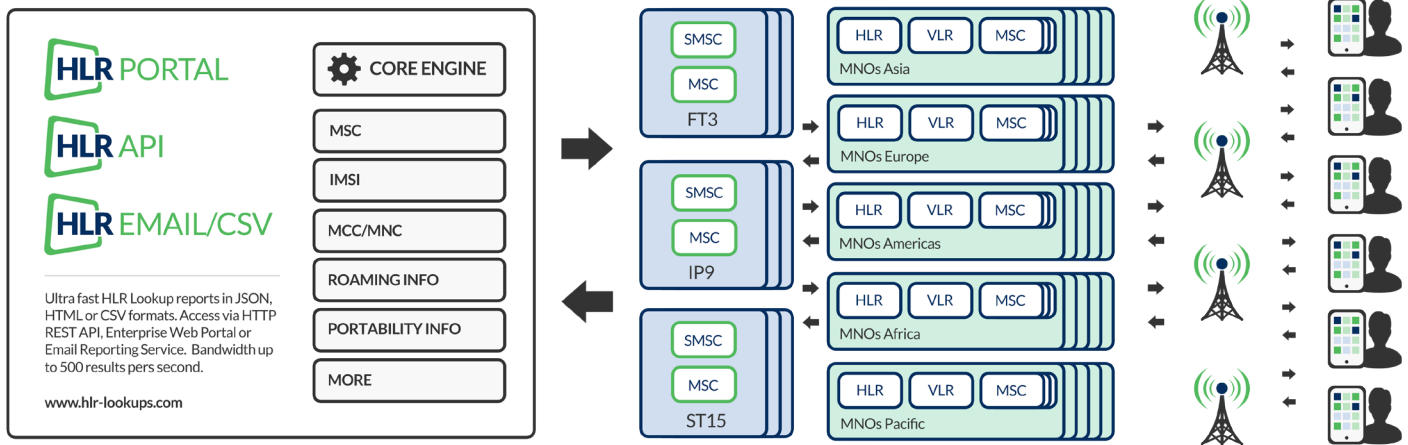
With the emergence of Mobile Number Portability, cell phone subscribers can now keep their number when they change carriers. One result is a dramatic rise in the number of customers who choose to change carriers and port their number to their new network, simply because they sometimes want the latest-model handset.

This of course is highly convenient for customers, but it has also created a major challenge: It is much harder now for businesses, universities, and other organizations to guarantee the successful delivery of voice calls and text messages, because their customer databases is often full of invalid or deactivated phone numbers. The result? A costly expenditure of time and money. HLR Lookup is a service that gets around this.

How It Works

HLR Lookups make it possible to check the status of any GSM cell phone number. By making a query to the Home Location Register, the lookup service determines whether that number is valid, whether it is currently active in a mobile network, and if so which network, whether it was ported from another network, and whether it is roaming. The query will also return meta information such as the IMSI, MSC, MCC and MNC.

All mobile phone operators are connected by a network known as the Signaling System No. 7 network — or simply the SS7. The SS7 forms the backbone of the SMS (short message service) text messaging system, and it is used by cell phone operators to exchange information concerning setting up phone calls, number translation, prepaid billing systems, and so on. HLR Lookup services obtain information by sending the appropriate message over the SS7 mobile signaling network.



The process to run HLR Lookups is simple. MSISDNs (cell phone numbers) are submitted via the Enterprise Portal, the HLR Lookup API or via email as a text file. The HLR Lookup Core Engine queries the SS7 signaling network and obtains HLR Lookup results from the serving MNOs (Mobile Network Operators). The lookup results are returned via HTML, JSON or CSV at a speed of up to 500 results per second and contain MSC, IMSI, MCC and MNC values as well as roaming, portability, connectivity status and other subscriber information. The lookups can be performed using different routing options.



What is an HLR?

HLR stands for Home Location Register. It is essentially a central global database of all the cellphone subscribers registered with a particular mobile network. Every mobile operator – from Vodafone, China Mobile and Telefonica to Sprint, T-Mobile and Airtel – uses an HLR. They use it to check the authenticity of a phone call when it is registered with a transmitter, either on the person's home network or when the person is roaming abroad.

Continually updated in real time, HLRs hold the most accurate, up-to-date information on any cell phone subscriber anywhere in the world. An HLR store details of every SIM card issued by the mobile phone operator. Each SIM has a unique identifier, called an IMSI, which is the primary key to each HLR record.

HLR Lookup Portal and API Services

The Enterprise HLR Lookup Portal and API systems are equipped with redundant access to the global network of SMS centers and multiple geographically diverse links into the SS7 mobile signaling network. They can harness the power of its high-speed technology to quickly and accurately identify large batches of mobile phone subscribers in more than 200 countries.

The system can be accessed in a threefold way:

- Enterprise HLR Lookup Portal
- HTTP REST API
- CSV or text file submission via email

HLR Lookup Return Values

Below is a summary of the information that can be obtained in real time through HLR Lookups:

- The name of the mobile network operator to which that number currently belongs
- The country in which the network operator and the phone customer are located
- The MCC (Mobile Country Code), the MNC (Mobile Network Code), IMSI (International Mobile Subscriber Identity) and MSC (Mobile Switching Center) of the phone number
- Whether the number is currently active, has been deactivated, or was never registered – and therefore whether the number is valid or invalid
- If so, the name of the network to which the number belonged when first registered
- Whether a subscriber is roaming, which country they are roaming in, and what network they are currently logged on to (information obtained through the MSC address currently serving the number)
- Whether the phone is switched on or temporary errors could prevent the delivery of an SMS – for example, if the phone is turned off or out of coverage for an extended time – referred to as an “Absent Subscriber”
- The identification of the network even if an error such as “Absent Subscriber” is returned

The HLR lookup process is fast, effective, inexpensive, and accurate. The system (portal and API alike) can process up to 500 requests per second asynchronously. Turnaround time on email submission reports is around 24 hours. Please feel free to sign up for a free trial account at www.hlr-lookups.com.