



# Location services

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Eseye

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## 1 Introduction

Many of Eseye's customers install systems that are in fixed locations, yet locating these devices is important for a variety of reasons. Although this may be accomplished with great accuracy using technologies such as GPS, this is often an unnecessary overhead.

## 2 Options from Eseye.

Eseye offer three options for locating the devices using the cellular connection:

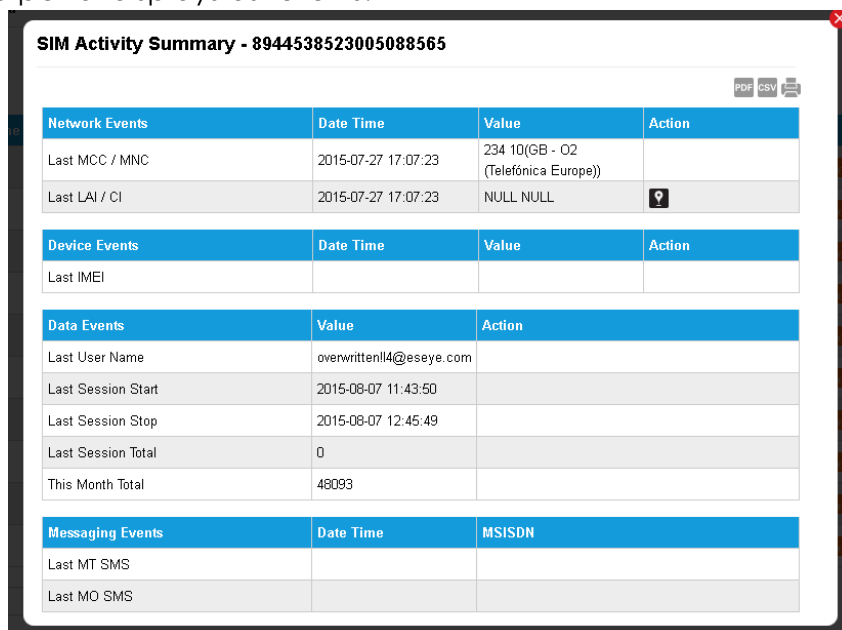
1. Country Location - provides the country in which the device is located. Available from the bill, SIAM portal and API.
2. Standard Location - makes use of information supplied by the mobile networks when the devices authenticate with our Radius servers. Only available from the SIAM portal.
3. Premium Location - uses the information from the HLR, and an application on the SIM card, to provide location data. Only available from the API.

### 2.1 Country Location

Eseye use a variety of sources to determine the country a device is located in for billing purposes. For each billable event, we will determine the country, so that the activity can be billed correctly.

Because the system uses a variety of sources, the country may be updated as new information becomes available. This information is available on bills, the SIAM web portal, and via the JSON API.

The SIAM web portal displays as follows:



**SIM Activity Summary - 8944538523005088565**

Network Events	Date Time	Value	Action
Last MCC / MNC	2015-07-27 17:07:23	234 10(GB - 02 (Telefónica Europe))	
Last LAI / CI	2015-07-27 17:07:23	NULL NULL	?

Device Events	Date Time	Value	Action
Last IMEI			

Data Events	Value	Action
Last User Name	overwritten14@eseeye.com	
Last Session Start	2015-08-07 11:43:50	
Last Session Stop	2015-08-07 12:45:49	
Last Session Total	0	
This Month Total	48093	

Messaging Events	Date Time	MSISDN
Last MT SMS		
Last MO SMS		

## 2.2 Standard Location

The Standard Location service is included for all our customers. Each time the device authenticates for a data session, we use the information supplied in the request to provide a best effort estimate for the location of the device.

We use a number of cell lookup databases, which are updated periodically to provide the location fix information.

Due to the level of accuracy in the cell lookup databases this may have a variable resolution. In some cases we will be able to supply a good approximation of the location, in others it may be that only the country is available, and occasionally there is insufficient information even for this.

This information is available on the SIAM web portal and will be displayed as follows:



## 2.3 Premium Location

The Premium Location service is available for a monthly charge, and is only available via the JSON API. For each location request, the Location Based Server will interrogate the HLR and / or use an application running on the SIM card to determine information about the cell tower in use. If the device is not online then the last recorded location will be used.

This information is used to perform a cell lookup, using premium databases to provide the most up to date location fix.

As part of the premium service, users can also register to receive a HTTP POST of the location information when the Eseye network receives new location information. A HTTP Post displays as follows:

```

{
  "status": {
    "status": "OK",
    "errorCode": "",
    "errorMessage": ""
  },
  "machine": {
    "ICCID": "8944538523005960607",
    "location": {
      "Lat": 53.593197362939,
      "Lon": -3.0687352174615
    }
  }
}

```

## 2.4 Comparison

	Country Location	Standard Location	Premium Location
Information	Country	Map view	Lat / Lon
Interface	On request	On request	On Request / Push
Availability	Last billing record from host network	Last authentication	On demand
Resolution	Country	Two decimal places of the longitude and latitude	Maximum
Cell Database	N/A	Standard	Premium